LOCUS OF CONTROL AND ADHERENCE TO DIABETIC REGIMEN AMONG MALE AND FEMALE PATIENTS WITH DIABETES

A DISSERTATION SUBMITTED TO THE TAMILNADU DR.M.G.R. MEDICAL UNIVERSITY, CHENNAI, IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF SCIENCE IN NURSING

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CERTIFICATE

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Place:

Date:

A STUDY TO ASSESS THE LOCUS OF CONTROL AND ADHERENCE TO DIABETIC REGIMEN AMONG MALE AND FEMALE PATIENTS WITH DIABETES ATTENDING A SELECTED HOSPITAL OPD IN MADURAI

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*"**Responsibilities are always to be fulfilled**"*

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ABSTRACT

The research project is “A study to assess the locus of control and adherence to diabetic regimen among male and female patients with diabetes attending a selected hospital OPD in Madurai.All hypotheses were tested at 0.05 level of significance. The study was based on Bandura’s social cognitive theory (1963)**.** Descriptive correlational design was adopted for the study. The sample size consists of 50 male and 50 female patients with diabetes mellitus who attended the Diabetology OPD of Govt.Rajaji Hospital, Madurai. Convenient sampling technique was used for including the samples for the study. The tools used for the study were modified diabetes locus of control scale to assess the locus of control and Diabetes Self Care Activities Scale to assess the adherence of patients with diabetes to the diabetic regimen (diet, exercise, smoking, medications, blood sugar testing, foot care and self care recommendations). The data was collected for a period of six weeks, organized and analyzed in terms of both descriptive and inferential statistics. **The major findings of the study were:**

- 94% of males and 92% females had good internal locus of control
- 46% males and 44% females had poor chance locus of control
- 82% males and 78% females had moderate level of powerful others locus of control
- 54% of male and 56% of female diabetic patients had moderate level of adherence to diabetic regimen
- There is significant difference between the male and female patients with diabetes for internal, chance and powerful others locus of control and adherence to diabetic regimen.

- There is a moderate relationship exists between internal locus of control and adherence to diabetic regimen among males, while no statistically significant relationship exists between chance locus of control, powerful others locus of control and adherence to diabetic regimen among males and no statistical relationship exists between locus of control and adherence to diabetic regimen among females with diabetes.
- There is a significant association between internal and chance locus of control with selected demographic variables among patients with diabetes except for internal locus of control and sex among females and duration of diabetes; chance locus of control and sex among males; powerful locus of control with selected demographic variables
- There is significant association between level of adherence to diabetic regimen among male and female patients with diabetes and selected demographic variables except for sex and age of the samples in females.

It's high time for nurses to formulate strategies to improve adherence to diabetic regimen among patients with diabetes to prevent the complications and to improve the health status of the patients.

CHAPTER I

INTRODUCTION

“I’ll be able to manage me better if I believe in myself”

anonymous

BACKGROUND OF THE STUDY

Diabetes mellitus is a clinical syndrome characterized by hyperglycemia due to absolute or relative deficiency of insulin. This can arise in many ways but is most commonly due to autoimmune type 1 diabetes or to adult onset type 2 diabetes (Nicholas A Boon, 2006)

The impact of urbanization and automation has lead to a rapid change in our lifestyles by ways of decreased physical activity (increased sedentariness) and increased consumption of convenience foods’ which are easy to cook and eat but are high in fat and refined carbohydrates and low in fiber. Changing lifestyles have led to increase in the incidence of adult onset type 2 diabetes. (Mohan,2011).The prevalence of diabetes for all age groups worldwide was estimated to be 2.8% in 2000 and it will be 4.4% in 2030 (Sarah wild, 2006)

WHO predicts that developing countries will bear the brunt of this epidemic in the 21st century. Currently more than 70% of the people with diabetes live in low and middle income countries. It is one of the major causes of premature illness and death world wide. The largest age group currently affected by diabetes is between 40-59 years. By 2030, this ‘record’ is expected to move to the 60-79 age group with some 196 million cases.80% of the type 2 diabetes is preventable by changing diet, increasing physical

activity and improving the living environment [accessed on 15-03-2011, www.worlddiabetesfoundation.org].

According to 5th Diabetic Atlas released on 14th November, 2011, the prevalence of diabetes mellitus in India is 61.3million and it is estimated that the number will reach 101.2 million by 2030s[accessed on 15-11-2011,www.diabetesatlas.org]

Diabetes is one of the most common and most important metabolic diseases that are one of the leading causes of mortality worldwide. Practically any organ system can be affected by diabetes and has become a major health problem in most part of the world. Longstanding inadequately managed or untreated cases of diabetes leads to complications which cause blindness, end stage renal diseases, increase risk for stroke, ischemic heart diseases , peripheral vascular diseases, peripheral neuropathy, lower extremity amputations due to involvement of foot etc[accessed on 16-8-2011, www.indiandiabetesfoundation.org]

The reason for dramatic increase in the prevalence in diabetes has been attributed to:

-lifestyle changes due to modernization and urbanization

-ageing of population

-low birth weight [accessed on 18-7-2011, www.nethealthsit.com]

Rural Tamilnadu suffers the epidemic with a prevalence of 13.5% in the under 30 population. More women than men had the occurrence of the disease (Directorate of public health, 2011).

The diabetes regimen is extremely complex to follow and so it is difficult for many patients to adhere with it. To develop a good control over the blood sugar level, it is necessary to follow the complex regimen. This regimen includes maintaining a proper diet, engaging in regular physical activity or exercise, blood glucose monitoring and taking prescribed medications. (Belind,2005)

Adherence has been defined as the degree to which a patients' voluntary behavior corresponds with the clinical recommendations of health care provider. It believes that patients are self sufficient individuals who assume an active and voluntary role in defining and achieving goals for their medical treatment (Lutfey, 1999)

Kavanagh (1993) suggests that in order to increase adherence of the patients with diabetes to the prescribed diabetic regimen, it is important to determine what predicts and individual's ability to maintain the treatment objectives after and initial diabetes education program. Determining reliable prediction of adherence provides a better understanding of how to improve adherence to this regimen.

Locus of control is the framework of Rotter's (1954) social learning theory of personality. Locus of control refers to the extent to which individuals believe that they can control events that affect them. Individuals with a high internal locus of control believe that events result primarily from their own behavior and actions. Those with a high external locus of control believe that powerful others, fate or chance primarily determine events in their lives. The Health Locus of Control theory is used to assess the adherence to diabetes regimen in some studies. This is because it is found that the perception of control influence whether and individual tries to prevent and manage their

own health problems. Individuals with high perceived control may have better health as her or she is more likely to take health enhancing actions. An individual perceives more control over their health when the locus of control is internal than when the locus of control is external [accessed on 4-4-2011 from www.wikipedia.org].

Nurses in the health care delivery system should be able to identify the patients' behavior related to adherence and many a time the rationale for the failure to adherence is not properly understood. As the locus of control has an important role in the behavior of an individual, necessary attention should be given to identify the locus of control to improve the patients' adherence. Identification of the locus of control enables the nurse to determine the extent of health education needed for each individual.

NEED AND SIGNIFICANCE OF THE STUDY

"A man is but the product of his thoughts what he thinks, he becomes"

Mahatma Gandhi

Diabetes mellitus, is due to deficiency or absence of insulin or the interference with insulin activity causing varying degree of disruption of carbohydrate, fat metabolism and storage, excessive gluconeogenesis from protein catabolism and water and electrolyte imbalance (Ross and Wilson, 2002)

World Health Organization (2010) has already declared that diabetes has reached epidemic proportions, as number of diabetes patients or prevalence have gone up dramatically over last few decades, from only 30 millions in 1985 to 135 millions in 1995, 177 millions in 2000, 285 millions in 2010 and WHO estimates by current trend that by 2025 the number of diabetic patients will be more than 300 millions. The increase

in number of diabetes patients will be mainly in developing countries such as India, china and other highly populated developing countries.

According to Centre For Disease Control and Prevention (CDC),(2005) the prevalence rate of diabetes in United States was approximately 7% of the population or more than 20 millions in 2005 [accessed on 8-6-2011from www.nethealthsite.com]

The International Diabetes Federation recently published findings revealing that in 2007, the country with the largest number of people with diabetes is India (40.9million). As the numbers of diabetic patients are increasing, at an alarming rate in India, experts term India as "diabetes capital" of the world. The exorbitant figures of diabetes prevalence in India made government to start a National Diabetes control Program in 1987 [accessed on 15-7-2011 from indiandiabetes.com].

The alarming rise in the prevalence of diabetes mellitus in India has been attributed to the demographic pattern, changing lifestyles as well as the environment. Indians are genetically more susceptible to the disease, acquiring a higher proportion of body fat and higher resistance to insulin. The projected rise in the prevalence of diabetes is linked to socioeconomic development, a younger age of onset, low body mass index(BMI) threshold and a concomitant tendency to gather fat around the waist.(Ramachandran,2005)

New figures for diabetes prevalence in India indicate that the epidemic is progressing rapidly across the nation, reaching a total of 62.4 million persons with diabetes in 2011 and 77.2 million people are on the threshold, with prediabetes. This is

the findings published by the ICMR-India Diabetes (ICMR-INDIAB) study. The study reported a prevalence of 10.4% diabetic population in Tamilnadu (Diabetes alarm, The Hindu, 2011September 29)

A clinical study was conducted by Furqan and Janchai (2008) to evaluate the frequency of different diabetes associated problems among 182 patients attending OPD of a rehabilitation institute in U.S showed that most patients (86%)exhibited several complications of the disease. Two of the most common complications were peripheral neuropathy (68%) and problems related to eye (43%).

Another clinical study conducted from 1983 to 1993 by the Diabetes Control And Complications Trial (DCCT) funded by the National Institute of Diabetes and Digestive and Kidney Diseases on 1441 volunteers aged 13- 39 years in U.S and Canada showed that keeping blood glucose levels as close to normal as possible slows the onset and progression of the eye, kidney and nerve damage caused by diabetes [accessed on 24-8-2011 from www.ndic.org].

There are two categories of vascular complications of diabetes: micro vascular (retinopathy, nephropathy and neuropathy) and macro vascular (coronary heart diseases (CHD), cerebrovascular diseases and peripheral vascular disease (PVD). Other problems associated with long term diabetes mellitus are dental infections (periodontitis), hyperglycemia in surgical patients, birth defects among children with mothers having diabetes, depression, increased expenditure on treatment, decrease in average life expectancy by 10-15 years etc(Joyce M Black,2009)

Diabetes mellitus is a chronic disease that requires lifelong medical treatment and lifestyle adjustment. This lifelong need to manage diabetes is challenging and daunting for people who have managed their diseases alone or with family members for more than 95% of their life span. Individuals with diabetes need to follow their meal plan daily, to lose weight if they are overweight or obese, engage in physical activity, monitor their blood glucose levels regularly, perform daily foot care and quit smoking if they are current smokers [accessed on 18-7-11,www.health.com]

Contemporary perspectives on diabetes care accord a central role to patient self care, or self management. Self care implies that patient actively monitors and responds to changing environmental and biological conditions by making adaptive adjustments in the different aspects of diabetes treatment in order to maintain adequate metabolic control and reduce the probability of complications. Several factors affect the client's adherence to the therapeutic regimen. It includes age (decreased adherence as age advances), gender (men are more adhere to regimen than women), self esteem (high level of self esteem increases adherence), self efficacy (a positive relationship exists between patient's self efficacy and adherence), depression (decreases adherence), and alcohol abuse (greater alcohol use was associated with poorer adherence) (WHO, 2007)

A retrospective cohort study conducted by Michael etal (2006) on the effect of medication non adherence on hospitalization and mortality among 11532 patients with diabetes mellitus showed that non adherent patients had higher glycosylated hemoglobin, systolic and diastolic blood pressure and low density lipoprotein cholesterol levels (Allan Showalter,2006)

In order to increase the adherence to the diabetic regimen, it is important to determine what predicts an individual's ability to maintain the treatment objectives and determining reliable predictors of adherence, may allow for a better understanding of how to improve adherence to this regimen. Health psychology uses the locus of control theory to identify the individual's ability to control the events that affects them. To avoid the complications that may generate from diabetes mellitus, one should adhere to the treatment regimen which is prescribed. To follow the regimen is also extremely complex. So it is important to identify the 'locus of control' of the individual to the adherence of the regimen. Locus of control can be internal or external [accessed on 4-4-2011 from www.wikipedia.org].

Konen J.C, Summerson and Dignan M.B(1993) conducted a study to assess the relationship between glycemic control and family function, stress and locus of control on 407 subjects from a family medicine ambulatory care unit, a tertiary pediatric diabetic unit and a public community health centre in New York. They used multidimensional health locus of control scale to assess the locus of control. Glycemic control was measured by fasting blood sugar level and glycosylated hemoglobin A1C level. Those with acceptable glycosylated HbA1C levels had high family cohesion ,less negative affect, fewer loci of control, but higher perception of inadequate coping than those in poor control. It is found that the knowledge of the famiy function, affect, locus of control, perceived stress and coping may be useful in the care of adults with diabetes mellitus since then psychosocial parameters are associated with objective and perceived glycemic control [accessed on 4-4-2011 from www.pubmed.org].

Having such a growing situation of diabetes mellitus, more attention should be given towards, educating the diabetic patients. It is fact that there is a great need to give counseling to the diabeteics about diet, exercise, drugs and foot care. An appreciation for knowledge and skills that diabetic patients must acquire can help in providing effective patient education and counseling. Teaching clients about self care will help in maintaining the blood glucose level with in normal range(Beebe & Donnel, 2001)

Data from developing countries concerning the prevalence and correlates of adherence in patients with diabetes are particularly scarce. As it is predicted that there is a steep increase in the prevalence of diabetes in the developing countries like India, it is imperative to prevent the repercussions of the epidemic. It is necessary to find out their locus of control to improve the adherence of the patients to the regimen. Nurses have major role to play in educating & supporting diabetic people to manage the condition adequately, to prevent or delaying the development of complications (Jillian Hill, 2004). The researcher found that the correlation studies of locus of control and adherence to the regimen are less, it is necessary to enquire in to those areas. So the researcher had taken this study.

STATEMENT OF THE PROBLEM

A study to assess the locus of control and adherence to diabetic regimen among male and female patients with diabetes attending a selected hospital OPD in Madurai

OBJECTIVES

1) To assess and compare the locus of control among male and female patients with diabetes attending a selected hospital OPD in Madurai

2) To assess and compare the adherence to diabetic regimen among male and female patients with diabetes attending a selected hospital OPD in Madurai
3) To assess the relationship between locus of control and adherence to diabetic regimen among male and female patients with diabetes attending a selected hospital OPD in Madurai
4) To find out the association between locus of control and selected demographic variables such as age, sex, education, type of diabetes and duration of diabetes among male and female patients with diabetes
5) To find out the association between adherence to diabetic regimen and selected demographic variables such as age, sex, education, type of diabetes and duration of diabetes among male and female patients with diabetes.

HYPOTHESES

All hypotheses were tested at 0.05 level of significance

H_1

There will be a significant difference between the locus of control among male and female patients with diabetes.

H_2

There will be a significant difference between the adherence to diabetic regimen among male and female patients with diabetes.

H_3

There will be a positive relationship between locus of control and adherence to diabetic regimen among male and female patients with diabetes.

H_4

There will be a significant association between locus of control among male and female patients with diabetes and selected demographic variables such as age, sex, education, type of diabetes and duration of diabetes.

H_5

There will be a significant association between adherence to diabetic regimen among male and female patients with diabetes and selected demographic variables such as age, sex, education, type of diabetes and duration of diabetes.

OPERATIONAL DEFINITIONS

Locus of control:

It is the extent to which an entity believes the current and anticipated circumstances and its response to them (behavior), are within its control.

In this study, it refers to the belief the diabetic clients have in the amount of control they had over their lives which was measured by scores obtained by the subjects in modified diabetes locus of control scale.

It consists of two components: internal locus of control, in which individual believes that the outcomes are a direct result of his or her own behavior and external locus of control , in which individual believes that outcomes are a result of either chance or powerful other people.

Adherence:

It is act of sticking to a routine or program. In this study it refers to the degree to which a diabetic client's voluntary behavior corresponds with the clinical recommendations to achieve goals for their medical treatment which was measured by scores obtained by the subjects in diabetes self care activities scale.

Diabetic regimen:

Diabetic regimen is a multifactorial intervention to control the blood glucose levels in patients with diabetes.

In this study, diabetic regimen refers to dietary modifications, medications, blood glucose testing, foot care, and exercise.

Patients with diabetes:

Patients with diabetes refers to male and female patients who were medically diagnosed as diabetic patients and attended the selected hospital OPD during the data collection period in Madurai.

ASSUMPTIONS

- Adherence to diabetic regimen and locus of control vary from individual to individual.
- Adherence to diabetic regimen can be assessed.
- Every diabetic patients will got a prior information about the self care management of diabetes mellitus from their relatives or health care providers.

DELIMITATIONS

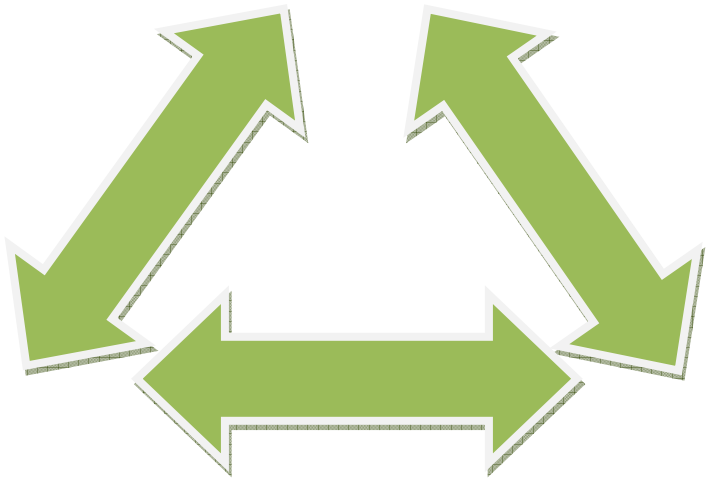
- The study was delimited to male and female diabetic clients attending in selected hospital OPD , Madurai
- Data collection period was delimited to 6 weeks.

PROJECTED OUTCOME

The findings of the study will help to identify the relationship between locus of control and adherence to diabetic regimen. The study will help to educate the patients with diabetes to adhere to the diabetic regimen.

Fig:1 CONCEPTUAL FRAMEWORK BASED ON SOCIAL COGNITIVE THEORY

Behavior (adhering or not adhering to diabetic regimen which includes medication, diet, exercise and foot care)



Personal factors

- Age
- Gender
- Education
- Internal locus of control (internal motivation, determination and perception)
- Marital status
- Type of diabetes
- Duration of diabetes

Environmental factors

- Chance locus of control
- Powerful others locus of control- relatives, friends, health care providers (physicians, nurses and other members in health team)
- Working conditions (job stress)

Bandura and Walters broadened the social learning theory in 1963 to formulate the social cognitive theory. The social cognitive theory is relevant to health communication. It deals with cognitive, emotional aspects of behavior for understanding behavioral change. The concepts of the theory provide ways for new behavioral research in health education.

Core assumptions and statement

The theory explains how people acquire and maintain certain behavioral patterns, while also providing the basis for intervention strategies. Evaluating behavioral changes depends on the factors environment, people and behavior.

Environment refers to the factors that can affect a person's behavior. It includes family members, friends, colleagues, health care providers, working conditions. Environment and situation provides the framework for understanding behavior. Situation refers to the cognitive or mental representation of the environment that may affects a person's behavior.

The three factors environment, people and behavior are constantly influencing each other. The environment provides model for behavior.

Concepts:

Environment: factors physically external to the person.

Situation: perception of the environment.

Behavioral capability: knowledge and skill to perform a given behavior; promotes mastery learning through skill learning.

Expectations: anticipated outcome of a behavior.

Self control: personal regulation of goal directed behavior or performance.

Self efficacy: the person's confidence in performing a particular behavior.

Reciprocal determination: the dynamic interaction of the person, the behavior, and the environment in which the behavior is performed.

Application of the theory in conceptual framework

Personal factors of an individual includes age, gender, educational status, marital status, internal locus of control, self control, self efficacy, type of diabetes, duration of diabetes, comorbid disease conditions and socio economic status. Internal locus of control is enhanced according to one's perception, self care, internal motivation and determination of maintaining that behavior.

Environmental factors includes the chance locus of control; powerful others locus of control comprising of family members, friends or health care providers and working conditions (job stresses).

Behavior refers to the individuals' ability to adhere or not adhere to the diabetic regimen. It depends on the personal and environmental factors and behavioral capability.

CHAPTER II

REVIEW OF LITERATURE

Researcher almost never conducts a study in an intellectual vacuum. Their studies are undertaken within the content of an existing base of knowledge. Researchers generally, undertake a literature review to familiarize them about the topic under study (Polit & Hungler, 2007).

The review of literature was done from published articles, text book, report and Medline search. Literature review is organized and presented under the following headings.

1. Literature and studies related to diabetes mellitus
2. Literature and studies related to locus of control in patients with diabetes mellitus
3. Literature and studies related to adherence to diabetic regimen among diabetic patients
4. Studies related to correlation between locus of control and adherence to diabetes.

1. Literature and studies related to diabetes

Diabetes mellitus (kercing manis / sweet urine) is a chronic progressive metabolic disease characterized by hyperglycemia due mainly to absolute insulin insufficiency (in type 1 diabetes) or relative insulin deficiency and insulin resistance (in type 2 diabetes). Partly due to the metabolic perturbations caused by hyperglycemia, diabetes affects virtually every system of the body with long term and severe damage if diabetes control over time proves to be suboptimal (WHO, 1999).

Sarah wild etal (2000) conducted a cross sectional study to estimate the prevalence of diabetes and the number of people of all ages with diabetes for years 2000 and 2030. Data on diabetes prevalence by age and sex from a limited number of countries were extrapolated to all 191 WHO member states and the overall prevalence was estimated to be 2.8% in 2000 and 4.4% in 2030. The prevalence of diabetes is higher in men than women. Prevalence among urban population in developing countries is projected to double between 2000 and 2030.

A cross sectional study was done in the rural areas of Goa to estimate the prevalence of diabetes mellitus and study the associated factors in the rural population by Vaz, Ferrria and Kulkarni (2009). Participants ≥ 20 years of age were selected by systematic random sampling. They were interviewed with the help of a structured, pretested questionnaire. This was followed by clinical examination, anthropometry and relevant laboratory investigations. The prevalence of diabetes in the study population was 10.3% (130/1266) with a prevalence of 8.4% among men and 12% among women.

Ambady Ramachandran , Annaasami Yamuna, and Narayaanasamy Murugesan (2006) conducted a comparative study to assess the prevalence of diabetes mellitus and cardio vascular risk factors associated with urbanization in Tamilnadu. Subjects aged ≥ 20 years of age were studied in Chennai, Kanchipuram town and Panruti. It revealed that periurban villages (Panruti) had a lower prevalence of diabetes (9.2%) than the city (18.2%) and town (16.4%). Approximately 40% of the subjects were newly diagnosed. They pointed the high prevalence of diabetes in the city (Chennai) and the

town(Kanchipuram) and a rapid increase in the periurban villages could largely due to urbanization.

Survey conducted by Madras Diabetes Research Foundation (MDRF) in 2001 among 26,000 patients in Chennai revealed a prevalence of around 16% (Dinesh Varma,2004).

Using the Indian Diabetes Risk Score (IRDS), Sanjay kumar Gupta (2008) conducted a prevalence study in the rural areas of Tamilnadu (Chunampett and Annechikuppam) covering a population of 35,000. Among that 1936 respondents were studied. Prevalence of diabetes in the study population was found to be 5.99%; out of these 45% known case of diabetes mellitus had high (>60) IDRS.

2. Literature and studies related to locus of control in patients with diabetes mellitus

Locus of control is a theory in personality psychology refers to the extent to which individuals believe that they can control events that affect them. Understanding of the concept was developed by Julian B. Rotter in 1954, and has since become an important aspect of personality studies.

One's "locus" (Latin for "place" or "location") can either be internal (meaning the person believes that they control their life) or external (meaning they believe that their environment, some higher power, or other people control their decisions and their life).

Individuals with a high internal locus of control believe that events result primarily from their own behavior and actions. Those with a high external locus of control believe that powerful others, fate, or chance primarily determine events.

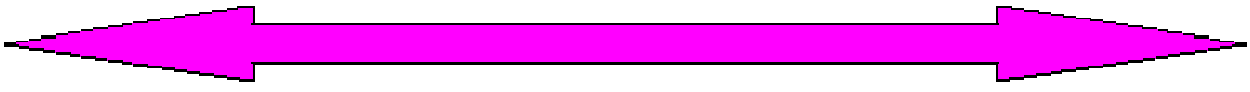
Those with a high internal locus of control have better control of their behavior, tend to exhibit more political behaviors, and are more likely to attempt to influence other people than those with a high external (or low internal respectively) locus of control. Those with a high internal locus of control are more likely to assume that their efforts will be successful. They are more active in seeking information and knowledge concerning their situation.

The theory of locus of control proposes that a person has an internal locus of control if he/she interprets events as being dependent on his/her own behavior or stable characteristics, and external control when he/she thinks that events are in some way contingent upon luck, fate, chance or the influence of other powerful persons (Rotter 1966).

A locus of control orientation is a belief about whether the outcomes of our actions are contingent on what we do (internal control orientation) or on events outside our personal control (external control orientation)." (Zimbardo, 1985)

Thus, locus of control is conceptualised as referring to a unidimensional continuum, ranging from *external* to *internal*:

External Locus of Control Individual believes that his/her behaviour is guided by fate, luck, or other external circumstances(relatives, friends, health care providers, job stress)	**Internal Locus of Control** Individual believes that his/her behaviour is guided by his/her personal decisions and efforts.



Locus of control's most famous application has probably been in the area of health psychology, largely thanks to the work of Kenneth Wallston. Scales to measure locus of control in the health domain are reviewed by Furnham and Steele (1993). The most famous of these would be the Health Locus of Control Scale and the Multidimensional Health Locus of Control Scale, or MHLC (Wallston, Wallston, & DeVellis, 1976; Wallston, Wallston, Kaplan & Maides, 1976).

Risa etal (2003) conducted a study to examine the applicability and relationship to glycemic control of the diabetes locus of control (DLC) scales in a low literacy, economically deprived African American population with type 2 diabetes. A significant relationship was found between belief in chance and both glycemic control at the 6 month followup and the change in glycemic control over time.

Kathryn etal (2007) conducted a household survey regarding the influence of internal locus of control and risk reduction of diabetes. They analyzed data from 2592 U.S households. Logistics regression analysis was conducted to examine the sense of personal control and social supports were associated with diabetes mellitus. After adjusting for age, obesity and socioeconomic position, a one point increase in sense of control (ie. a stronger sense of control) was admitted with a significant reduction in risk of diabetes mellitus (odds ratio =0.67, 95%, confidence interval ; 0.47, 0.95).

Association between diabetic control and individual and family characteristics were examined by a co relational study conducted by Christine and Ieuan (1996). Thirty eight children and adolescents between the ages of 10 and17 were examined. Questionnaires were given on self concept, locus of control and family cohesion and

adaptability ($P<0.05$) and with locus of control. The data suggests, surprisingly that there is a tendency for good diabetic control sometimes to be achieved by individuals with and external locus of control by a rigid family organization when there is a danger that the development of autonomy and independence may be at risk.

A cross sectional study was conducted by Petreick and Vuletic (2009) to explore the locus of control of type 2 diabetes mellitus among 77 type 2 diabetes mellitus patients. Questionnaires were given on general data and ZLK-90-2 questionnaire. Statistical analysis showed that the mean patient age was 63.4 years ±13.1 and mean duration of diabetes 10.3±8.2 years. The belief in internal locus of control was most common in study patients; followed by the belief in health dependence on circumstances, influence of chance, destiny or God and finally influence of powerful others. Highly educated patients had a statistically significant less expressed internal locus of control and belief in the influence of chance, destiny or God.

3. Literature and studies related to adherence to diabetic regimen

Adherence has been defined as the "active, voluntary, and collaborative involvement of the patient in a mutually acceptable course of behavior to produce a therapeutic result."(Meichenbaum, Turk, 1987)

Adherence to diabetic regimen includes adherence to diet, medications, exercise foot care etc to prevent the complications of diabetes mellitus. adherence problems are common in diabetes management. Demographic factors such as ethnic minority, low socioeconomic status, and low levels of education have been associated with lower regimen adherence and greater diabetes-related morbidity. Psychological factors are also

linked with regimen adherence. Appropriate health beliefs, such as perceived seriousness of diabetes, vulnerability to complications, and the efficacy of treatment, can predict better adherence. Family relationships play an important role in diabetes management. Studies have shown that low levels of conflict, high levels of cohesion and organization, and good communication patterns are associated with better regimen adherence. Greater levels of social support, particularly diabetes-related support from spouses and other family members, are associated with better regimen adherence. Social support provided by nurse case managers has been shown to promote adherence of diabetic patients to diet, medications, SMBG, and weight loss. the quality of the patient-doctor relationship is a very important determinant of regimen adherence. Research has generally shown that lower regimen adherence can be expected when a health condition is chronic, when the course of symptoms varies or when symptoms are not apparent, when a regimen is more complex, and when a treatment regimen requires lifestyle changes. (Alan M. Delamater,2001)

A prospective cross sectional study conducted by Rasaq, Adisa, Fakeye and Fasanmade(2009) to assess the adherence to medication among 140 ambulatory patients with type 2 diabetes patients in a tertiary teaching hospital in Nigeria showed that approximately sixty percentage of the patients were adjusted adherent with prescribed medication. A significant association exists between genders and opinions on physician's mode of approach during patient- physician interaction as a contributory factor for non adherence ($p=0.038$). it was found out that financial constraint (34.4%) was the major barrier to optimal adherence to medication.

Adherence to self care and glycemic control among people with insulin dependent diabetes mellitus was studied by Maisa Toljano and Maija Hentinen (2001) in 213 people with insulin dependent diabetes mellitus using a self report questionnaire and a biochemical indicator (HbA1c). According to this finding, a fifth (19%) of the respondents was neglecting self care. The others undertook flexible (46%); regimen adherence (16%) or self planned self care (19%). The subjects who were adherent to self care had better metabolic control than those who neglected self care.

The findings from a recently published cross national diabetes attitudes , wishes and needs (DAWN) study conducted by International Diabetes Federation (2001) showed patients reported adherence rates for medication in type1 and 2 diabetic patients of 83% and 78% respectively; self monitoring of blood glucose adherence was 70% and 64% respectively. The adherence rates observed for diet for type1 and 2 diabetic patients were 39% and 37% respectively, and for exercise they were 37% and 35% respectively. The study was conducted by collecting information from 500 respondents of 13 countries through structured interviews by person and by phone.

Habibeh Ahmadipour etal (2009) conducted a randomized clinical trial on the adherence to oral hypoglycemic agents in patients with type 2 diabetes by using two methods of completing diary checklists and collecting drug shells. 100 type 2 diabetes patients were selected through systematic sampling method and randomly allocated in to two groups in equal number. It was found that the adherence rate was good (96.7%) in the checklist group, moderate adherence (3.3%) with no case of poor adherence. In the

reference group, the corresponding figures were 55.2%, 6.9% and 37.9% respectively ($p<0.05$ between groups).

A retrospective study was conducted by Joyce A.Cramer(2003) to identify the extent to which patients omit doses of medications prescribed for diabetes. A literature search (1966-2003) was performed to identify reports with quantitative data on adherence with oral hypoglycemic agents and insulin and correlations between adherence rates and glycemic control. Retrospective analysis showed that adherence to oral hypoglycemic agent therapy ranged from 36-93% in patients remaining on treatment for 6-24 months. Prospective electronic monitoring studies documented that patients took 67-85% of oral hypoglycemic agent doses as prescribed. Insulin adherence among patients with type 2 diabetes was 62-64%.

Searle and Ready (1991) conducted a survey to assess the potential for an exercise and weight control for patients with type 2 diabetes. Questionnaires were sent to 1000 individuals with diabetes, who were randomly selected. Although a few respondents participated in organized (7.7%) or informal (36.8%) exercise programs, or expressed an interest in participating (36.8%), the majority (84%) believed that they should get more exercise.

4. Studies review related to relationship between locus of control and adherence to diabetes regimen

Schlenk and Hart (1984) conducted an interview among thirty insulin dependent outpatients in a diabetic clinic to assess the relationship between health locus of control, health value, and social support and compliance of persons with diabetes mellitus.

Questionnaires were used to measure the independent variables of health locus of control, health value, and perceived social support. Self report and direct observation were used to measure the dependent variable, compliance with insulin administration, diet, exercise, hypoglycemia management, self monitoring of blood glucose and foot care prescriptions. A statistically significant relationship was found between compliance and social support ($P<0.001$), powerful others health locus of control($P<0.01$) and internal health locus of control ($P<0.05$).

In a study, Peyrot and Rubin (2004) identified that internal diabetes locus of control was significantly associated with positive outcomes i.e. strict diabetic adherence among 165 adult patients from a comprehensive outpatient diabetes education program. The structure and correlates of diabetes locus of control was examined. It was found that diabetes locus of control was significantly associated with positive outcomes; strict regimen adherence. The other components- powerful others and chance locus of control was associated with a variety of measures reflecting a pattern of dysfunction.

CHAPTER III

RESEARCH METHODOLOGY

The research methodology indicates that the general pattern of organizing the procedure of gathering valid and reliable data for an investigation. This chapter provides a brief description of the method adopted by the investigator in this study.

RESEARCH APPROACH

Survey approach was used for this study. A survey is designed to obtain information from populations regarding the prevalence, distribution and interrelations of variables within those populations(Polit & Hungler,2012)

RESEARCH DESIGN

A descriptive correlational design was adopted for this study. Correlational design is a non experimental research design in which the interrelationship or association between two variable is assessed(Polit & Hungler,2012).

SETTING OF THE STUDY

The study was conducted at Govt.Rajaji Hospital, Madurai. The hospital is 2418 bedded with all super specialties and is at a distance of 5km from Sacred Heart Nursing College. Diabetology OPD of the hospital has an average of 150 patients visit per day. Insulin will be administered for patients who need insulin and oral hypoglycemic agents (OHA) will be given for patients free of cost in the diabetology OPD.

POPULATION

Population refers to the aggregate or totality of all the objects, subjects or members that conform to a set of specifications (Polit & Hungler,2012). The populations for the study were clients with diabetes attending the diabetic OPD of Govt.Rajaji Hospital, Madurai.

SAMPLE

The sample of this study were diabetic clients attended the Diabetology OPD of Govt.Rajaji Hospital, Madurai.

SAMPLE SIZE

The sample size of this study included

a) 50 male clients with diabetes

b) 50 female clients with diabetes

SAMPLING TECHNIQUE

The sampling technique used for this study was convenient sampling technique.

A non probability sampling method which entails the use of the most convenient available people or objects as subjects in a study. (Polit & Hungler, 2007).

CRITERIA FOR SAMPLE SELECTION

The sample selection was done based on the following inclusion and exclusion criteria.

Inclusion criteria

- Male and female clients with diabetes within the age group of 40-80 years.
- Clients with diabetes more than 3 months.
- Clients who are able to read and write Tamil

Exclusion criteria

- Clients who are having severe mental disorders and Alzheimer's disease
- Clients who are not willing to participate

DATA COLLECTION TOOLS

The instrument used in this research study consisted of 3 parts; Part I, Part II and Part III

Part I :

It consists of demographic variables. It comprises of age, sex, education, occupation, type of diabetes and duration of diabetes.

Part II:

It consists of a modified diabetes locus of control scale having 3 subscales as internal, chance and powerful others locus of control with 6 items each. It is a standardized tool (Locus of Control Scale) developed by Wallston and Stein (1976) and accessed free of cost from internet. It had a reliability of 0.75. The researcher modified the tool to assess the locus of control of patients with diabetes and translated the tool into tamil version to make the subjects comprehend the questions.

Part II consists of 18 items in 3 subscales as internal, chance and powerful others. Each item carries a minimum score of zero and a maximum score of six. Patients was asked to

answer each item. Based on the scoring locus of control is assessed. Maximum score for each subscale is 36 and minimum score is zero.

The interpretation is as follows.

Good locus of control : 27-36

Moderate locus of control : 17-26

Poor locus of control : 6-16

Part III:

It includes Diabetes Self Care Activities Scale consists of 25 items in 7 sections as diet, exercise, smoking, medications, blood sugar testing, foot care and self care recommendations. It is a standardized tool developed by Deborah J.Toobert (1999) and accessed online as free of cost. It is having a reliability of 0.80.Part III consists of 25 items. Among those, 17 items were scored on a scale of 0-7 of which two items had negative scoring. 7 items needs no scoring. One item was scored as '0' and '1'.

Total score is 99 and minimum score is '0'.

The interpretation is as follows.

Good adherence : 67-99

Moderate adherence : 34-66

Poor adherence: 0-33

TESTING OF THE TOOL

Reliability

Split half technique was used to assess the reliability of the instruments. Karl Pearson's correlation co-efficient was used to assess the reliability. Reliability for

internal locus of control, chance locus of control , powerful others locus of control and self care activity scale were 0.95, 0.78,0.77 & 0.93 respectively.

Validity

Validity of the tool was established by giving the tool to five experts in the field of medicine and nursing for their opinions and suggestions. Based on their suggestions the tool was reframed.

PILOT STUDY

Pilot study was conducted to determine the feasibility and relevance of the study. It was carried out in ten diabetic clients; five of them were males and five females in the same manner as that of the original study. Data were analyzed to find out the suitability of statistical method. It revealed that the study is feasible, relevant and practicable.

DATA COLLECTION PROCEDURE.

Before starting the study, the researcher obtained formal permission to conduct the study from the dissertation committee of Sacred Heart Nursing College and Diabetology department of the hospital. The period of the study was extended to six weeks. Data were collected from patients who came to the diabetology OPD for insulin administration every day from 7 am to 12 Noon. The researcher introduced himself to each subject and explained the purpose of the study. Based on the criteria for sample selection, the researcher selected subjects and provided a self prepared questionnaire on self care activities and they were asked to maintain it for the next seven days. Reliability of the information was checked daily while the subjects attended the OPD for insulin administration by directly asking the questions. After seven days the researcher transcribed the information from the answered questionnaire in to the original scale.

Additional data were collected and clarified from the subjects. Nearly 15 minutes were taken for collecting data from each sample. All the samples cooperated well for data collection. Doubts of the subjects were clarified and additional information regarding diabetic self care management was provided after the completion of the interview.

PLAN FOR DATA ANALYSIS

Data analysis was done according to the objectives of the study. Both descriptive and inferential statistics were used for analysis.

Descriptive analysis

Frequency, percentage and mean were used for analysis of the demographic variables.

Inferential statistics

Analysis of variance (ANOVA) was used to determine the association between selected variables. Karl Pearson's coefficient of correlation was used to assess the correlation between locus of control and adherence to diabetic regimen.

PROTECTION OF HUMAN RIGHTS

Pilot study and main study were conducted only after the approval of the dissertation committee of the college and from the Diabetology department of the hospital. Informed consent of the subjects was obtained verbally before starting data collection. Assurance was given to subjects that confidentiality would be maintained. The subjects were explained about the rights for withdrawal from the study during the data collection period. There was an absence of physical and psychological strain to study subjects.

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

Analysis is a process of organizing and synthesizing data in such a way that research questions can be answered and hypothesis tested(Polit & Hungler,2012).

This chapter deals with description of samples, analysis and interpretation of the data collected and achievement of the objectives of the study. The data were collected from 100 diabetic clients attended the diabetology OPD of Govt.Rajaji Hospital in order to identify the relationship between the locus of control and adherence to diabetic control among male and female clients with diabetes. The data collected is tabulated and presented under the following sections.

Section I

This section deals with the diabetic clients' demographic data such as age, educational level, sex, occupation, type of diabetes and years of diabetes

Section II

This section deals with the locus of control among male and female patients with diabetes

Section III

This section deals with the level of adherence of the diabetic patients to the diabetic regimen

Section IV

This section deals with

- Comparison between the locus of control among male and female diabetic patients.
- Comparison between the adherence to diabetic regimen among male and female diabetic patients.

Section V

This section gives the description regarding the correlation between locus of control and adherence to diabetic regimen.

Section VI

This section deals with the

- Association between the locus of control and selected demographic variables among male and female patients with diabetes.
- Association between the adherence to diabetic regimen and selected demographic variables among male and female patients with diabetes.

SECTION I

Demographic characteristics

***Table* 1:Distribution of samples according to demographic characteristics**

	Male (n=50)		Female (n=50)		Total (N=100)	
Characteristics	**F**	**%**	**F**	**%**	**F**	**%**
Age:						
41-50 years	16	32	12	24	28	28
51-60 years	16	32	17	34	33	33
61-70 years	8	16	14	28	22	22
>71 years	10	20	7	14	17	17
Sex:	50	100	50	100	100	100
Educational status:						
Primary	23	46	27	54	50	50
Upper primary	18	36	12	24	30	30
High school	8	16	7	14	15	15
Higher secondary school	1	2	3	6	4	4
Graduate	-	-	1	2	1	1

Occupation						
Employed	33	66	22	44	55	55
Unemployed	17	34	28	56	45	45
Type of diabetes						
Type I	-	-	1	2	1	1
Type II	50	100	49	98	99	99
Duration of diabetes						
3-6 months	-	-	1	1	1	1
7-12 months	6	12	9	18	15	15
1-3 years	16	32	15	30	31	31
4-7 years	16	32	16	32	32	32
>7 years	12	24	9	18	21	21

The above *table* 1 depicts the following information.

Regarding age, majority of males were in the age groups of 41-50 years and 51-60 years (64%) whereas majority of the female samples (34%) were in the age group of 51-60 years.

With regard to sex, the sample selection was 50% males and 50% females.

Regarding the educational status of the clients, most of the males (54%) and females (46%) had primary education, 36% of males and 24% females had completed upper primary education.

With regard to occupation 66% of the males were employed while 56% of females were unemployed.

Regarding the type of diabetes, 50(100%) of males and 49(98%) females had type 2 diabetes mellitus and one (1%) female had type I diabetes mellitus.

Regarding the duration of diabetes among the sample population,32(64%) males had diabetes for 1-7 years whereas 16 (32%) females had diabetes for 4-7 years. Only 12(24%) males and 9(18%) females had diabetes for more than 7 years

SECTION II

***Table* 2- Distribution of samples according to locus of control of diabetes**

(N=100)

Locus of control	Males n=50		Females n=50		Total N=100	
	F	%	F	%	F	%
Internal locus of control						
Good (27-36)	48	96	46	92	94	94
Moderate (17-26	2	4	4	8	6	6
Poor (6-16)	-	-	-	-	-	-
Chance locus of control						
Good (27-36)	8	16	5	10	13	13
Moderate (17-26	19	38	24	48	43	43
Poor (6-16)	23	46	21	42	44	44
Powerful others locus of control						
Good (27-36)	8	16	13	26	21	21
Moderate (17-26	41	82	37	74	78	78
Poor (6-16)	1	2	-	-	1	1

The above *table (table* 2) describes the following:

With regard to internal locus of control, 48(96%) males and 46(92%) females had good internal locus of control. Regarding chance locus of control, 23(46%) males had poor chance locus of control and 24(48%) females had moderate chance locus of control. Regarding powerful others locus of control, 41(82%) males and 37(74%) females were having moderate powerful locus of control.

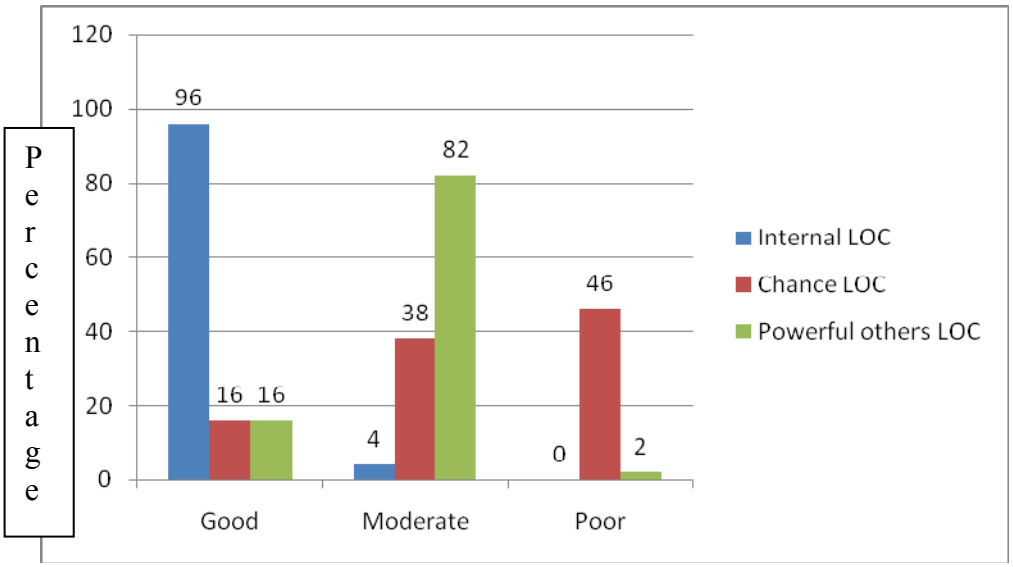


Figure 1: Distribution of male patients with diabetes according to locus of control

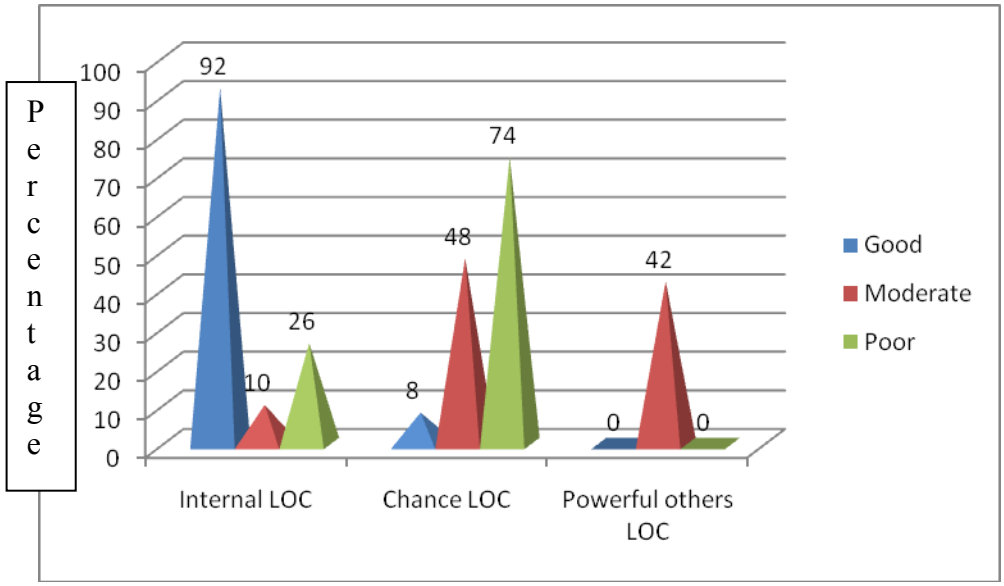


Figure 2: Distribution of female patients with diabetes according to locus of control

SECTION III

***Table* 3- Description of the samples according to adherence of the diabetic clients to the diabetic regimen**

(N=100)

Level Of Adherence	Males n= 50		Females n= 50		Total	
	F	%	F	%	F	%
Good (67-99)	6	12	3	6	9	9
Moderate (34-66)	27	54	28	56	55	55
Poor (0-33)	17	34	19	38	36	36

From *table* 3, it is inferred that, regarding the level of adherence of male and female diabetic clients to the diabetic regimen, 27 (54%) males and 28(56%) females had moderate level of adherence. Only 6(12%) males and 3 (6%) females had good level of adherence to the diabetic regimen.

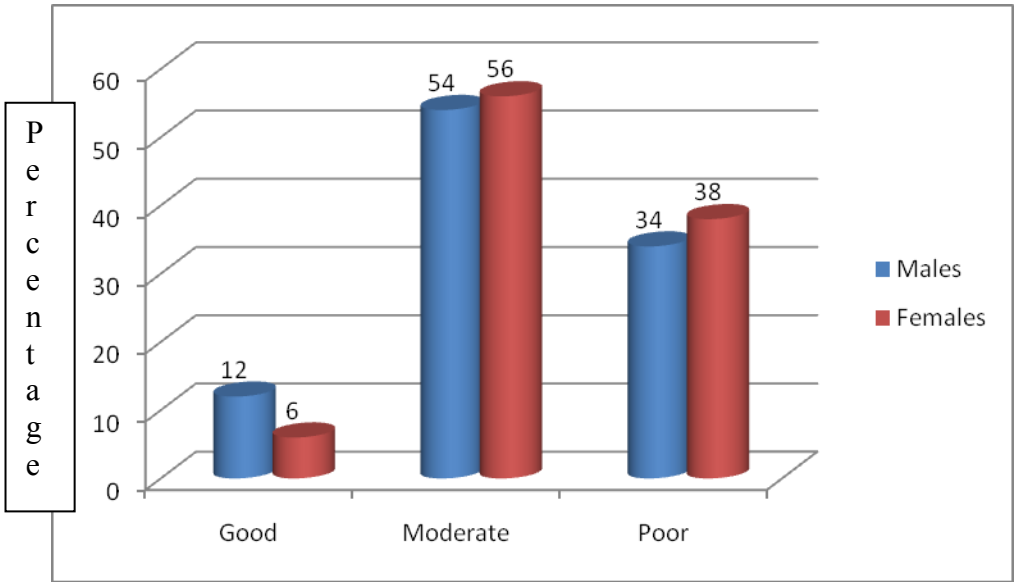


Figure:3. Distribution of male and female diabetic patients according to the level of adherence to diabetic regimen

SECTION IV

This section deals with

- Comparison between the locus of control among male and female diabetic patients.
- Comparison between the adherence to diabetic regimen among male and female diabetic patients.

***Table* 4- Comparison between the locus of control among male and female diabetic clients**

(N=100)

Group	M	MD	SD	't'value	df
Internal locus of control					
Males	34.32		6.96		
		3.88		2.10*	98
Females	30.44		3.74		
Chance locus of control					
Males	17.24		7.9		
		3.38		2.0*	98
Females	20.62		5.9		

(N=100)

Group	M	MD	SD	't'value	df
Powerful others					
locus of control					
Males	24.02		3.55		
		0.76		1.30#	98
Females	24.78		2.16		

*Significance at 0.05 level

#Not significant at 0.05 level

To compare the locus of control of male and female patients with diabetes, the null hypothesis was stated as follows;

H_{01}: There will be no significant difference between the locus of control among male and female patients with diabetes.

Table 4 summarizes that regarding internal locus of control, males had the mean score of 34.32 and females had a mean score of 30.44 where the mean difference is 3.88 and the 't' value obtained, 2.10 which significant at 0.05 level(df 98). With regard to chance locus of control, the mean difference is 3.38, and the obtained 't' value 2.0 which is significant at 0.05 level (df 98). Regarding powerful others locus of control, the mean difference is 0.76 where as the 't' value obtained is 1.30 which is less than the table value at df 98, which indicates that powerful others locus of control is not significant at 0.05 level.

From the above *table,* it is inferred that internal and chance locus of control are significant at 0.05 level of significance. So the null hypothesis H_{01} is rejected and research hypothesis is accepted for internal and chance locus of control and H_{01} is accepted for powerful others locus of control. ie. there is a significant difference between the male and female patients with diabetes for internal and chance locus of contol and no significant difference between the male and female patients with diabetes for powerful others locus of control. It is inferred that internal locus of control is more for males and chance locus of control is more for females.

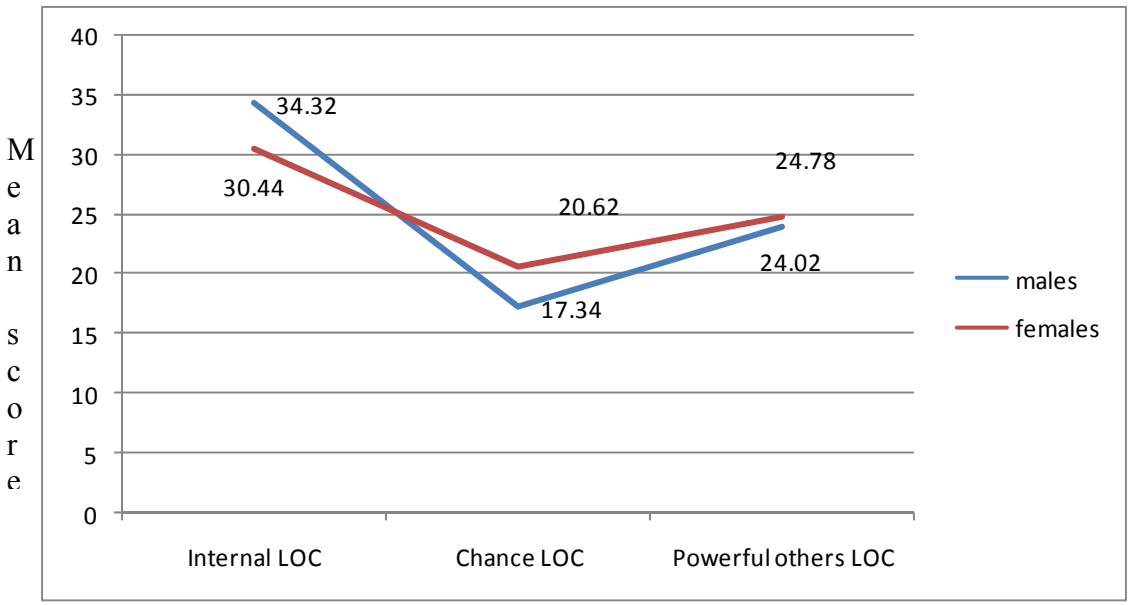


Fig. 4: Comparison of locus of control between male and female patients with diabetes.

***Table* 5- Comparison between the level of adherence to diabetic regimen among male and female diabetic patients**

(N=100)

Group	M	MD	SD	't'value	df
Level of adherence					
Males	44.78		11.65		
		2.88		1.81*	98
Females	48.66		10.26		

*Significance at 0.05 level

#Not significant at 0.05 level

To compare the level of adherence among male and female diabetic patients, the null hypothesis was stated as follows:

H_{02}: There will be no significant difference in the level of adherence among male and female diabetic patients.

Table 5 portraits that the mean difference of male and female clients with diabetes is 2.88 and the't' value obtained is 1.88 which is significant at 0.05 level (df 98). Hence the researcher rejects the null hypothesis and accepted the research hypothesis. So the above findings suggest that there is significant difference among male female diabetic patients regarding adherence to diabetic regimen. Females are having more adherence to diabetic regimen than males.

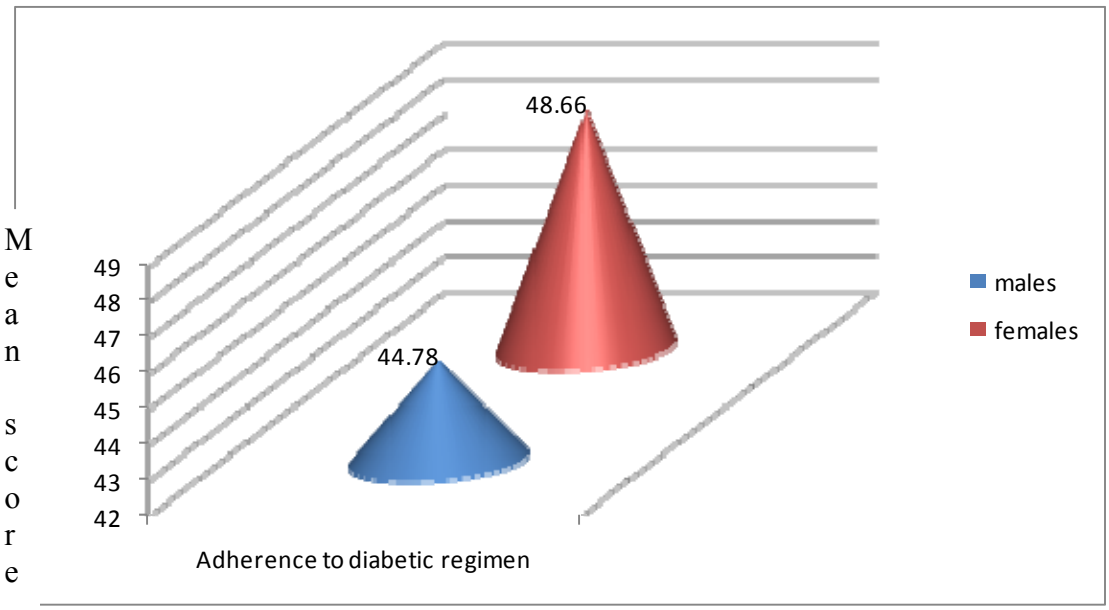


Fig. 5: Comparison of mean score of adherence to diabetic regimen between male and female patients with diabetes

SECTION V

Correlation between locus of control and adherence to diabetic regimen

***Table* 6: Correlation between locus of control and adherence to diabetic regimen among males**

N=50

Variables	Mean	SD	'r'value
Internal locus of control	33.92	2.85	
			.57*
Adherence to diabetic regimen	46.66	13.92	
Chance locus of control	17.93	6.98	
			-.46#
Adherence to diabetic regimen	46.66	13.92	
Powerful others locus of control	24	1.99	
			-.33#
Adherence to diabetic regimen	46.66	13.92	

*significance at 0.05 level

not significant at 0.05 level

To test the above objective, the null hypothesis stated was follows:

H_{03}: There is no significant positive relationship between the locus of control and level of adherence to diabetic regimen.

With regard to internal locus of control and level of adherence among males with diabetes, the obtained 'r' value was 0.57, significant at 0.05 level. It shows that there is a moderate relationship exists between internal locus of control and adherence to diabetic regimen among males. Hence the null hypothesis is rejected for internal locus of control.

Regarding chance locus of control and level of adherence, the obtained 'r' value was -0.46, insignificant at 0.05 level. So the null hypothesis is accepted for chance locus of control. It implies that there is no statistically significant relationship between chance locus of control and adherence to diabetic regimen among males with diabetes.

With regard to powerful others locus of control and level of adherence, the obtained 'r' value was -0.33, insignificant at 0.05 level. It shows that there is no statistically significant relationship between powerful others locus of control and adherence to diabetic regimen.

***Table* 7: Correlation between locus of control and adherence to diabetic regimen among females**

N=50

Variables	Mean	SD	'r'value,
Internal locus of control	33.44	3.74	
			-.37#
Adherence to diabetic regimen	44.78	10.26	
Chance locus of control	18.24	6.33	
			-.27#
Adherence to diabetic regimen	44.78	10.26	
Powerful others locus of control	24.78	4.04	
			-.22#
Adherence to diabetic regimen	44.78	10.26	

*significance at 0.05 level

not significant at 0.05 level

To test the above objective, the null hypothesis stated was follows:

H_{03}: There is no significant positive relationship between the locus of control and level of adherence to diabetic regimen among female patients with diabetes.

With regard to internal locus of control, chance locus of control, powerful others locus of control and level of adherence among females with diabetes, the obtained 'r'

value were -0.37,-0.27 and -0.22 respectively which is not significant at 0.05 level. It shows that there is no statistical relationship exists between internal locus of control, chance locus of control, powerful others locus of control and adherence to diabetic regimen among females with diabetes. Hence the null hypothesis is accepted for relationship between locus of control and adherence to diabetic regimen among female patients with diabetes.

SECTION VI

This section deals with the

- Association between the locus of control and selected demographic variables among male and female patients with diabetes.
- Association between the adherence to diabetic regimen and selected demographic variables male and female patients with diabetes.

***Table* 8 : Association between internal locus of control with the selected demographic variables of female patients with diabetes**

Demographic Characteristics	mean locus of control score	sum of squares ss	degrees of freedom	F ratio	5%F limit
Age					
41-50 years	14840.33	69.52	3		
51-60 years	18711.52	(between)		3.55*	2.77
61-70 years	15577.78	632.8	96		
>71 years	6851.57	(within)			
Sex					
Male	55377.92	0.64	1		
		(between)		0.0019#	3.93
Female	55911.68	3224.4	98		

Table cont…..

Demographic Characteristics	mean locus of control score	sum of squares ss	degrees of freedom	F ratio	5%F limit
Educational status					
Primary	28291.70	73.1	4		
Upper primary	14630.08	(between)		2.76*	2.47
High school	8092	629.22	95		
Higher secondary school	3675	(within)			
Graduate	1296				
Duration of diabetes					
3-6 months	1296	1198.06	4		
7-12 months	11236	(between)			
1-3 years	17888.26	2731.38		10.41*	2.47
4-7 years	16256.25	(within)		95	
>7 years	9735.11				

To find out the association between locus of control and selected demographic variables among female diabetic patients, the null hypothesis stated was:

H_{04}: There is no significant association between the locus of control and selected demographic variables like age, sex, years of diabetes and educational status among female diabetic patients.

Table 8 describes that the statistical association between internal locus of control and selected demographic variables for female diabetic patients is significant at 0.05 level of significance except for sex. So the researcher rejects the null hypothesis for the selected demographic variables except for sex among female patients with diabetes. It is therefore inferred that there is significant association between internal locus of control and selected demographic variables except for internal locus of control and sex.

***Table* 9: Association between chance locus of control with the selected demographic variables of female patients with diabetes**

Demographic Characteristics	mean locus of control score	sum of squares ss	degrees of freedom	F ratio	5%F limit
Age					
41-50 years	2324.08	484.29	3		
51-60 years	5015.52	(between)		10.16*	2.77
61-70 years	6776	1524.83	96		
>71 years	3003.57	(within)			
Sex					
Male	15523.22	9.61	1		
		(between)		0.17#	3.93
Female	16634.88	5314.89			
		(within)	98		

Table cont…..

Demographic Characteristics	mean locus of control score	sum of squares ss	degrees of freedom	F ratio	5%F limit
Educational status					
Primary	10800	353.35	4		
Upper primary	3816.33	(between)		5.07*	2.47
High school	1235.57	1655.77	95		
Higher secondary school	560.33	(within)			
Graduate	576				
Duration of diabetes					
3-6 months	81	507.71	4		
7-12 months	2500	(between)			
1-3 years	4860	1862.17		6.54*	2.47
4-7 years	6045.06	(within)	95		
>7 years	3802.77				

To find out the association between locus of control and selected demographic variables among female diabetic patients, the null hypothesis stated was:

H_{04}: There is no significant association between the locus of control and selected demographic variables like age, sex, years of diabetes and educational status among female diabetic patients.

Table 9 describes that the statistical association between chance locus of control and selected demographic variables for female diabetic patients is significant at 0.05 level of significance except for sex. So the researcher rejects the null hypothesis for the selected demographic variables except for sex among female patients with diabetes. It is therefore inferred that there is significant association between chance locus of control and selected demographic variables except for chance locus of control and sex.

***Table* 10: Association between powerful others locus of control with the selected demographic variables of female patients with diabetes**

Demographic Characteristics	mean locus of control score	sum of squares ss	degrees of freedom	F ratio	5%F limit
Age					
41-50 years	4920.75	282.2	3		
51-60 years	10228.76	(between)		3.63*	2.77
61-70 years	8452.57	2487.78	96		
>71 years	5432.14	(within)			
Sex					
Male	28848.02	7.84	1		
		(between)		1.51#	3.9
Female	30208.82	508.16			
		(within)			

Table cont…..

Demographic Characteristics	mean locus of control score	sum of squares ss	degrees of freedom	F ratio	5%F limit
Educational status					
Primary	17328	40.8	4		
Upper primary	7500	(between)		1.42#	2.47
High school	3703	676	95		
Higher secondary school	1728	(within)			
Graduate	484				
Duration of diabetes					
3-6 months	441	83.29	4		
7-12 months	5184	(between)			
1-3 years	9225	590.63		3.35*	2.47
4-7 years	9604	(within)	95		
>7 years	6778.77				

*significant at 0.05 level

#not significant at 0.05 level

To find out the association between locus of control and selected demographic variables among female diabetic patients, the null hypothesis stated was:

H_{04}: There is no significant association between the locus of control and selected demographic variables like age, sex, years of diabetes and educational status among female diabetic patients

Table 10 describes that the statistical association between powerful others locus of control and selected demographic variables for female diabetic patients is significant at 0.05 level of significance except for sex and education. So the researcher rejects the null hypothesis for the selected demographic variables except for sex and education with powerful others locus of control among female patients with diabetes. It is therefore inferred that there is significant association between powerful others locus of control and selected demographic variables except for powerful others locus of control with sex and education.

***Table* 11: Association of internal locus of control with the selected demographic variables of male patients with diabetes**

Demographic Characteristics	mean locus of control score	sum of squares ss	degrees of freedom	F ratio	5%F limit
Age					
41-50 years	18769	13.43	3		
51-60 years	18632.25	(between)		1.09#	2.77
61-70 years	8580.5	394.25	96		
>71 years	11560	(within)			
Sex					
Male	55377.92	0.64	1		
		(between)		0.0019#	3.93
Female	55911.68	3224.4	98		
		(within)			

Table cont…..

Demographic Characteristics	mean locus of control score	sum of squares ss	degrees of freedom	F ratio	5%F limit
Educational status					
Primary	24002.13	64.53	4		
Upper primary	19602	(between)		0.47#	2.47
High school	10011.12	4320.74	95		
Higher secondary school	1296	(within)			
Duration of diabetes					
7-12 months	7210.66	429.32	4		
1-3 years	18292.56	(between)		31.10*	2.47
4-7 years	18837.56	442.11	95		
>7 years	13200.33	(within)			

*significant at 0.05 level

#not significant at 0.05 level

To find out the association between locus of control and selected demographic variables among male diabetic patients, the null hypothesis stated was:

H_{04}: There is no significant association between the locus of control and selected demographic variables like age, sex, years of diabetes and educational status among male diabetic patients.

Table 11 describes that the statistical association between internal locus of control and selected demographic variables for male diabetic patients is insignificant at 5% level of significance except for duration of diabetes. So the researcher accepts the null hypothesis for the selected demographic variables except for duration of diabetes and internal locus of control among male patients with diabetes. It is therefore inferred that there is significant association between internal locus of control and selected demographic variables (duration of diabetes).

***Table* 12: Association of chance locus of control with the selected demographic variables of male patients with diabetes**

Demographic Characteristics	mean locus of control score	sum of squares ss	degrees of freedom	F ratio	5%F limit
Age					
41-50 years	4624	419.24	3		
51-60 years	3277.56	(between)		4.81*	2.70
61-70 years	3960.5	1524.83	96		
>71 years	4080.44	(within)			
Sex					
Male	15523.22	9.61	1		
		(between)		0.17#	3.93
Female	16634.88	5314.89			
		(within)	98		

Table cont…..

Demographic Characteristics	mean locus of control score	sum of squares ss	degrees of freedom	F ratio	5%F limit
Educational status					
Primary	10017.39	363.98	4		
Upper primary	5653.38	(between)		21.5*	2.47
High school	450	16.90	95		
Higher secondary school	144	(within)			
Duration of diabetes					
7-12 months	1700.16	261.39	4		
1-3 years	4726.56	(between)		4.46*	2.47
4-7 years	4522.56	1873.39	95		
>7 years	4641.33	(within)			

*significant at 0.05 level

#not significant at 0.05 level

To find out the association between locus of control and selected demographic variables among male diabetic patients, the null hypothesis stated was:

H_{04}: There is no significant association between the locus of control and selected demographic variables like age, sex, years of diabetes and educational status among male diabetic patients.

Table 12 describes that the statistical association between chance locus of control and selected demographic variables for male diabetic patients is significant at 0.05 level of significance except for sex. So the researcher rejects the null hypothesis for the selected demographic variables except for sex among male patients with diabetes. It is therefore inferred that there is significant association between chance locus of control and selected demographic variables except for chance locus of control and sex among male patients with diabetes.

***Table* 13: Association between powerful others locus of control with the selected demographic variables of female patients with diabetes**

Demographic Characteristics	mean locus of control score	sum of squares ss	degrees of freedom	F ratio	5%F limit
Age					
41-50 years	11826.56	205.24	3		
51-60 years	8055.06	(between)		2.6#	2.7
61-70 years	5512.5	2443.14	96		
>71 years	5712.1	(within)			
Sex					
Male	28848.02	7.84	1		
		(between)		1.51#	3.9
Female	30208.82	508.16			
		(within)			

Table cont…..

Demographic Characteristics	mean locus of control score	sum of squares ss	degrees of freedom	F ratio	5%F limit
Educational status					
Primary	1457.69	89.39	4		
Upper primary	9614.22	(between)		9.67*	2.7
High school	3828.12	295.98	95		
Higher secondary school	441	(within)			
Graduate	484				
Duration of diabetes					
7-12 months	3408.16	6515.6	4		
1-3 years	3073.28	(between)		27.65*	2.47
4-7 years	8556.25	7539.6	95		
>7 years	6816.33	(within)			

*significant at 0.05 level

#not significant at 0.05 level

To find out the association between locus of control and selected demographic variables among female diabetic patients, the null hypothesis stated was:

H_{04}: There is no significant association between the locus of control and selected demographic variables like age, sex, years of diabetes and educational status among female diabetic patients.

Table 13 describes that the statistical association between powerful others locus of control and selected demographic variables for male diabetic patients is significant at 5% level of significance except for sex and education. So the researcher rejects the null hypothesis for the selected demographic variables except for sex and education with powerful others locus of control among male patients with diabetes. It is therefore inferred that there is significant association between powerful others locus of control and selected demographic variables except for powerful others locus of control with sex and education.

SECTION VIII

Association between the adherence to diabetic regimen of male and female patients with diabetes and selected demographic variables.

***Table* 14: Association between the adherence to diabetic regimen of male patients with diabetes and selected demographic variables**

Demographic Characteristics	mean locus of control score	sum of squares ss	degrees of freedom	F ratio	5%F limit
Age					
41-50 years	34132.56	796.8	3		
51-60 years	43264	(between)		11.65*	2.77
61-70 years	14365.12	2188.58	96		
>71 years	17892.9	(within)			
Sex					
Male	108857.78	88.36	1		
		(between)		0.60#	3.9
Female	10026.42	14347.8			
		(within)			

Table cont…..

Demographic Characteristics	mean locus of control score	sum of squares ss	degrees of freedom	F ratio	5%F limit
Educational status					
Primary	46935.69	11995.19	4		
Upper primary	32088.88	(between)		92.94*	2.47
High school	32558.88	4130.43	95		
Higher secondary school	3136	(within)			
Duration of diabetes					
3-6 months		813.24	4		
7-12 months	8970.66	(between)			
1-3 years	32400	8637.98		3.01*	2.47
4-7 years	42539.06	(within)	95		
>7 years	25761.3				

*significant at 0.05 level

#not significant at 0.05 level

To find out the association between level of adherence selected demographic variables among male diabetic patients, the null hypothesis stated was:

H_{05}: There is no significant association between the level of adherence and selected demographic variables like age, sex, years of diabetes and educational status among male diabetic patients.

Table 14 shows that there is statistically significant association exist between adherence to diabetic regimen and selected demographic variables except for sex at 0.05 significance level. Hence the researcher rejects the null hypothesis for all selected variables except sex and accepts the research hypothesis. It is found out that there is significant association between level of adherence to diabetic regimen among male patients with diabetes and selected demographic variables except for sex.

Table 15: Association between adherence to diabetic regimen of female patients having diabetes with the selected demographic variables

Demographic Characteristics	mean locus of control score	sum of squares ss	degrees of freedom	F ratio	5%F limit
Age					
41-50 years	26508	144.87	3		
51-60 years	34785.94	(between)		0.90#	2.7
61-70 years	27016.07	5123.71	96		
>71 years	12097.28	(within)			
Sex					
Male	108857.82	88.36	1		
		(between)		0.60#	3.9
Female	100262.42	14347.8	98		
		(within)			

Table cont…..

Demographic Characteristics	mean locus of control score	sum of squares ss	degrees of freedom	F ratio	5%F limit
Educational status					
Primary	48471.70	543.28	4		
Upper primary	24843	(between)		2.73*	2.47
High school	16807	4725.3	95		
Higher secondary school	7203	(within)			
Graduate	3481				
Duration of diabetes					
3-6 months	3249	444.6	4		
7-12 months	16213.77	(between)			
1-3 years	30826.67	1804.12		5.85*	2.47
4-7 years	35721	(within)	95		
>7 years	14965.44				

*significant at 0.05 level

#not significant at 0.05 level

To find out the association between level of adherence selected demographic variables among female diabetic patients, the null hypothesis stated was:

H_{05}: There is no significant association between the level of adherence and selected demographic variables like age, sex, years of diabetes and educational status among female diabetic patients.

Table 15 shows that there is statistically significant association exist between adherence to diabetic regimen and selected demographic variables among female patients with diabetes except for age and sex at 0.05 significance level. Hence the researcher rejects the null hypothesis for all selected variables except age and sex and accepts the research hypothesis. It is found out that there is significant association between level of adherence to diabetic regimen among female patients with diabetes and selected demographic variables except for age of the samples and sex

CHAPTER V

DISCUSSION

The aim of the study was to assess the locus of control and adherence to diabetic regimen among male and female patients with diabetes attending a selected hospital OPD in Madurai.

Descriptive correlational design was used to conduct the study.

This study was conducted in the diabetology OPD of Govt.Rajaji Hospital, Madurai; 50 male and 50 female patients with diabetes were taken as samples and questionnaires and checklists were given for collecting the data.

The findings of the study are discussed with reference to the objectives of the study.

The objectives of the study are:

1) To assess and compare the locus of control among male and female patients with diabetes attending a selected hospital OPD in Madurai.
2) To assess and compare the adherence to diabetic regimen among male and female patients with diabetes attending a selected hospital OPD in Madurai.
3) To assess the relationship between locus of control and adherence to diabetic regimen among male and female patients with diabetes attending a selected hospital OPD in Madurai.

4) To find out the association between locus of control and selected demographic variables such as age, gender, education, occupation, type of diabetes and duration of diabetes among male and female patients with diabetes.
5) To find out the association between adherence to diabetic regimen and selected demographic variables such as age, gender, education, occupation, type of diabetes and duration of diabetes among male and female patients with diabetes.

Distribution of samples with regard to demographic variables

Samples of the study include 50 males and 50 females with diabetes. Majority of males were in the age groups of 41-50 years and 51-60 years (64%) whereas majority of the female samples (34%) were in the age group of 51-60 years. Regarding the educational status of the clients, most of the males (54%) and females (46%) had primary education, 36% of males and 24% females had completed upper primary education. Majority (66%) of the males were employed while most (56%) of the females were unemployed. Regarding the type of diabetes, 50(100%) males and 49(98%) females had type 2 diabetes mellitus and one (1%) female had type I diabetes mellitus. Regarding the duration of diabetes among the sample population,32(64%) males had diabetes for 1-7 years whereas 16 (32%) females had diabetes for 4-7 years. Only 12(24%) males and 9(18%) females had diabetes for more than 7 years.

A prevalence study conducted by Usha Menon etal (2008) on the glycemic status and prevalence of comorbid conditions among people with diabetes in Kerala found that most of the samples (34.1%) belongs to the age group of 56 -65 years , 21% of the samples had educated more than high school and 52.4% had diabetes for a duration of 1-5 years.

1. To assess and compare the locus of control among male and female patients with diabetes attending a selected hospital OPD in Madurai

Table 2 shows that with regard to internal locus of control, 94% of males and 92% females had good internal locus of control where as 4% males and 8% females had poor internal locus of control. Regarding chance locus of control, 46% males and 44% females had poor chance locus of control, 48% females and 38% males had moderate chance locus of control whereas 8% males and 5% females had good chance locus of control. With regard to powerful others locus of control, 82% males and 78% females had moderate level of powerful others locus of control, 26% females and 16% males had good and 2% males and 1% females had poor powerful others locus of control.

Table 4 summarizes that regarding internal locus of control, males had the mean score of 34.32 and females had a mean score of 30.44 where the mean difference is 3.88 and the 't' value obtained, 2.10 which is significant at 0.05 level (df 98). With regard to chance locus of control, the mean difference is 3.38, and the obtained 't' value 2.0 is significant at 0.05 level (df 98). Regarding powerful others locus of control, the mean difference is 0.76 where as the 't' value obtained is 1.30 which is less than the table value at df 98, which indicates that powerful others locus of control is not significant at 0.05 level. From the above description, it is inferred that internal locus of control is more for males and powerful others locus of control is more for females and no significant difference between males and females with regard to powerful others locus of control. So the null hypothesis is rejected and research hypothesis is accepted for internal and chance locus of control whereas the null hypothesis is accepted for powerful others locus of control.

This is concordant with the comparative study conducted by Evangeline, Kamlanabhan and Vasanthi(2004) on the locus of control among diabetic and non diabetic patients. They conducted the study on 100 samples among which 50 were males and 50 were females. It showed that there is a significant difference in the mean score of internality and externality of locus of control among males and females. It showed that females had more belief than men in God for controlling their blood sugar levels while men were having more internal locus of control.

This is also supported by Womack (1993), who found that American Indian men scored higher than women on the diabetes attitude scale (DAS) autonomy scale. Quackenbush etal (1996) found that men were more likely than women to believe that they could control the effects of their diabetes. Glasgow et.al (1997) perceived that men had lower perceived barriers to diabetes self management than did women.

2. To assess and compare the adherence to diabetic regimen among male and female patients with diabetes attending a selected hospital OPD in Madurai

From table 3, it is inferred that, regarding the level of adherence of the male and female diabetic clients to the diabetic regimen, 54% of male and 56% of female diabetic patients had moderate level of adherence, 34 % males and 38 % females had poor level of adherence and 12% males and 6% females had good level of adherence.

Table 5 portraits that the mean difference of male and female clients with diabetes is 2.88 and the‘t’ value obtained is 1.88 which is significant at 0.05 level (df 98). So the above findings suggest that there is significant difference among male female diabetic

patients regarding adherence to diabetic regimen. Females are having more adherence to diabetic regimen than males.

This is endorsed by Glasgow, Mc Caul and Schafer (1987), who conducted a comparative study on the self care behaviors and glycemic control in type I diabetes mellitus among males and females showed that men had lower level of adherence than females as assessed using a composite measure of diet.

3. To assess the relationship between locus of control and adherence to diabetic regimen among male and female patients with diabetes attending a selected hospital OPD in Madurai

Table 6 describes that with regard to internal locus of control and level of adherence among males with diabetes, the obtained 'r' value was 0.57, significant at 0.05 level. Regarding chance locus of control and level of adherence, the obtained 'r' value was -0.46, insignificant at 0.05 level. With regard to powerful others locus of control and level of adherence, the obtained 'r' value was -0.33, insignificant at 0.05 level. It implies that there is a moderate relationship exists between internal locus of control and adherence to diabetic regimen while no statistically significant relationship between chance locus of control, powerful others locus of control and adherence to diabetic regimen among males with diabetes.

Table 7 explains that with regard to internal locus of control, chance locus of control, powerful others locus of control and level of adherence among females with diabetes, the obtained 'r' value were -0.37,-0.27 and -0.22 respectively which is not significant at 0.05 level. It shows that there is no statistical relationship exists between

internal locus of control, chance locus of control, powerful others locus of control and adherence to diabetic regimen among females with diabetes . Hence the null hypothesis is rejected for relationship between locus of control and adherence to diabetic regimen among female patients with diabetes.

This corroborate with the correlational study conducted by Greg, Kriska,Narayan and Knowler (1996) on the relationship between physical activity and locus of control among 580 diabetic Indians found that individuals with an internal locus of control (score 1-16) were significantly ($P < 0.01$) more active than those with an external (score 17-40) locus of control.

The study is also backed up by Gebhardt, Van der Doef and Paul (2000) who conducted a correlational study on the psychometric properties and health behavior using Revised Health Hardiness Inventory in which locus of control is a major scale among 486 Dutch samples showed that the internal locus of control is more correlated to positive health behavior than external locus of control.

4. To find out the association between locus of control and selected demographic variables such as age, gender, education, occupation, type of diabetes and duration of diabetes among male and female patients with diabetes

Table 8 describes that the statistical association between internal locus of control and selected demographic variables for female diabetic patients is significant at 0.05 level of significance except for sex. So the researcher rejects the null hypothesis for the selected demographic variables except for sex among female patients with diabetes. It is

therefore inferred that there is significant association between internal locus of control and selected demographic variables except for internal locus of control and sex.

Table 9 describes that the statistical association between chance locus of control and selected demographic variables for female diabetic patients is significant at 0.05 level of significance except for sex. So the researcher rejects the null hypothesis for the selected demographic variables except for sex among female patients with diabetes. It is therefore inferred that there is significant association between chance locus of control and selected demographic variables except for chance locus of control and sex.

Table 10 describes that the statistical association between powerful others locus of control and selected demographic variables for female diabetic patients is significant at 5% level of significance except for sex and education. So the researcher rejects the null hypothesis for the selected demographic variables except for sex and education with powerful others locus of control among female patients with diabetes. It is therefore inferred that there is significant association between powerful others locus of control and selected demographic variables except for powerful others locus of control with sex and education.

Table 11 describes that the statistical association between internal locus of control and selected demographic variables for male diabetic patients is insignificant at 0.05 level of significance except for duration of diabetes. So the researcher accepts the null hypothesis for the selected demographic variables except for duration of diabetes and internal locus of control among male patients with diabetes. It is therefore inferred that there is significant association between internal locus of control and duration of diabetes.

Table 12 describes that the statistical association between chance locus of control and selected demographic variables for male diabetic patients is significant at 0.05 level of significance except for sex. So the researcher rejects the null hypothesis for the selected demographic variables except for sex among male patients with diabetes. It is therefore inferred that there is significant association between chance locus of control and selected demographic variables except for chance locus of control and sex among male patients with diabetes.

Table 13 describes that the statistical association between powerful others locus of control and selected demographic variables for male diabetic patients is significant at 0.05 level of significance except for sex and education. So the researcher rejects the null hypothesis for the selected demographic variables except for sex and education with powerful others locus of control among male patients with diabetes. It is therefore inferred that there is significant association between powerful others locus of control and selected demographic variables except for powerful others locus of control with sex and education.

This is supported by the study findings of Kathryn etal (2007), who conducted a household survey regarding the influence of internal locus of control and risk reduction of diabetes. They analyzed data from 2592 U.S households. Logistics regression analysis was conducted to examine the sense of personal control and social supports were associated with diabetes mellitus. After adjusting for age, obesity and socioeconomic position, a one point increase in sense of control (ie. a stronger sense of control) was

admitted with a significant reduction in risk of diabetes mellitus (odds ratio =0.67, 95%, confidence interval ; 0.47, 0.95).

Schultz & Schultz (2005), suggests that locus of control increases in internality (internal locus of control) up until middle age. There after external locus of control has the hegemony. (Toljamo & Hentinen 1995) noticed that patients with long duration of diabetes have less powerful others locus of control.

5. To find out the association between adherence to diabetic regimen and selected demographic variables such as age, gender, education, occupation, type of diabetes and duration of diabetes among male and female patients with diabetes

Table 14 shows that there is statistically significant association exists between level of adherence and selected demographic variables except for sex at 0.05 significance level. Hence the researcher rejects the null hypothesis for all selected variables except sex and accepts the research hypothesis. It is found out that there is significant association between level of adherence to diabetic regimen among male patients with diabetes and selected demographic variables except for sex.

Table 15 shows that there is statistically significant association exists between level of adherence and selected demographic variables among female patients with diabetes except for age and sex at 0.05 significance level. Hence the researcher rejects the null hypothesis for all selected variables except age and sex and accepts the research hypothesis. It is found out that there is significant association between level of adherence to diabetic regimen among female patients with diabetes and selected demographic variables except for age of the samples and sex.

This is in accord with the correlational study conducted by Mohammed Ali, Seid Saeed, Mohammed Hossein and Nooshin (2009) which found that there were no statistically significant correlations between adherence to diabetic regimen and locus of control among men, the internal and chance locus of control were correlated with adherence to regimen among women (r = .295 and r = - .228 respectively). They explained in their study that there is a statistically significant positive correlation exists between internal locus of control and level of education and statistically significant negative correlation between chance locus of control and sex.

CHAPTER – VI

SUMMARY, CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

This chapter deals with the summary of the study, conclusion, implications and recommendations for nursing practice, nursing research and nursing education.

Summary

The study was undertaken to assess the locus of control and adherence to diabetic regimen of male and female patients with diabetes attending a selected hospital OPD in Madurai.

The objectives of the study were as follows:

1) To assess and compare the locus of control among male and female patients with diabetes.
2) To assess and compare the adherence to diabetic regimen among male and female patients with diabetes.
3) To assess the relationship between locus of control and adherence to diabetic regimen among male and female patients with diabetes.
4) To find out the association between locus of control and selected demographic variables such as age, gender, education, occupation, type of diabetes and duration of diabetes among male and female patients with diabetes.
5) To find out the association between adherence to diabetic regimen and selected demographic variables such as age, gender, education,

occupation, type of diabetes and duration of diabetes among male and female patients with diabetes.

The following hypotheses were set for the study and all the hypotheses were tested at 0.05 level of significance.

H_1:

There will be a significant difference between the locus of control among male and female patients with diabetes.

H_2:

There will be a significant difference between the adherence to diabetic regimen among male and female patients with diabetes.

H_3:

There will be a positive relationship between locus of control and adherence to diabetic regimen among male and female patients with diabetes.

H_4:

There will be a significant association between locus of control among male and female patients with diabetes and selected demographic variables such as age, sex, education, type of diabetes and duration of diabetes.

H_5:

There will be a significant association between adherence to diabetic regimen among male and female patients with diabetes and selected demographic variables such as age, sex, education, type of diabetes and duration of diabetes.

Bandura's Social Cognitive theory was the conceptual model used for the study. The model deals with the personal, environmental factors and the behavior adopted by the individual.

The tool used in this study was modified Diabetes Locus of Control Scale to assess the internal, chance and powerful others locus of control and Diabetes Self Care Activities Scale to assess the adherence to the diabetic regimen. The reliability of the tool was found to be r=0.95, 0.78, 0.77 and 0.87 for internal, chance and powerful others locus of control scale and Diabetes Self Care Activities Scale respectively. The content validity of the tool was established by giving to five experts.

The pilot study was conducted in Government Rajaji Hospital, Madurai. The samples were five males and five females with diabetes attended the Diabetology OPD of the hospital.

The samples for this study were 50 male and 50 female patients with diabetes attended the Diabetology OPD of the Government Rajaji Hospital, Madurai. Sampling technique used was convenient sampling.

Data collection period was for six weeks. Questionnaire and check lists were used for data collection.

Data gathered was analyzed after tabulation using descriptive and inferential statistics.

Major findings of the study

1. Based on age, majority of the males were in the age groups of 41-50 years and 51-60 years (32% and 32% respectively) whereas majority of the female samples (34%) were in the age group of 51-60 years. 28% of females belongs to the age group of 61-70 years.
2. Regarding the educational status of the clients, most of the males (54%) and females (46%) had primary education, 36% of males and 24% females had completed upper primary education.
3. With regard to occupation 66% of the males were employed and 34% were unemployed while 56% of females were unemployed and 46% were employed.
4. Regarding the type of diabetes, 100% of males and 98% females had type 2 diabetes mellitus and 1% female had type I diabetes mellitus.
5. Regarding the duration of diabetes among the sample population, 32% males had diabetes for 1-3 years and 32% males had diabetes for 4-7 years whereas 32% females had diabetes for 4-7 years. Only 24% males and 18% females had diabetes for more than 7 years.
6. With regard to internal locus of control, 96% males and 92% females had good internal locus of control. None of the samples had poor internal locus of control.
7. Regarding chance locus of control, 46% males had poor chance locus of control and 48% females had moderate chance locus of control.
8. Regarding powerful others locus of control, 82% males and 74% females had moderate powerful locus of control.

9. Regarding the level of adherence of male and female diabetic clients to the diabetic regimen, 54% males and 56% females had moderate level of adherence. 34% males and 38% females had poor level of adherence. Only 12% males and 6% females had good level of adherence to the diabetic regimen.
10. Regarding internal locus of control, males had the mean score of 34.32 and females had a mean score of 30.44. With regard to chance locus of control, the males had the mean score of 17.24 and females had a mean score of 20.62. Regarding powerful others locus of control, males had the mean score of 24.02 and females had a mean score of 24.78. Comparing with males, females had high chance locus of control where as males had high internal locus of control. No significant difference among males and females for powerful others locus of control
11. With regard to adherence to diabetic regimen, males had the mean score of 44.78 and females had a mean score of 48.66. ie. Females had higher level of adherence than males.
12. Male patients with diabetes had statistically significant relationship between internal locus of control and adherence to diabetic regimen. The obtained 'r' value was 0.57. For chance and powerful others locus of control male patients had no statistically significant correlation with adherence to diabetic regimen. The obtained 'r' value were -0.46 and -0.33 respectively.
13. Female patients with diabetes had no statistically significant correlation between internal, chance and powerful others locus of control with adherence to diabetic regimen. The obtained 'r' value were -0.37,-0.27 and -0.22 respectively.

14. There was an association found between internal locus of control and chance locus of control of female patients with diabetes and age, education and duration of diabetes.
15. There was an association found between powerful others locus of control of female patients with diabetes with age and duration of diabetes.
16. There was an association found between internal locus of control of diabetic male patients with age and education.
17. There was an association between chance locus of control and age, education and duration of diabetes among male patients with diabetes.
18. There was an association found between powerful others locus of control of male patients having diabetes with age and duration of diabetes.
19. There is an association between level of adherence to diabetic regimen among male patients with diabetes and age, education and duration of diabetes.
20. There is an association between level of adherence to diabetic regimen among female patients with diabetes and education and duration of diabetes.

Conclusions

The following conclusions are drawn from the study.

- The higher percentage of male patients with diabetes come under the age group of 41-60 years.

- The higher percentage of female patients with diabetes come under the age group of 51-60 years.

- With regard to internal locus of control, majority of males and females had good internal locus of control.
- Regarding chance locus of control, most of the males had poor chance locus of control and whereas most of the females had moderate chance locus of control.
- Regarding powerful others locus of control, majority of males and females had moderate powerful locus of control.
- Majority of the males and females had moderate level of adherence to diabetic regimen.
- The study found that males had a high internal locus of control whereas females had a higher level of chance locus of control. No significant difference among males and females with regard to powerful others locus of control.
- Adherence to diabetic regimen level is higher among females than males.
- The study found that males had a positive relationship between internal locus of control and adherence to diabetic regimen and statistically negative relationship between chance locus of control, powerful others locus of control with adherence to diabetic regimen
- Female patients with diabetes had statistically negative relationship between internal locus of control, chance locus of control and powerful others locus of control with adherence to diabetic regimen.

- There was an association found between internal locus of control and chance locus of control of female patients with diabetes and age, education and duration of diabetes.
- There was an association found between powerful others locus of control of female patients with diabetes with age and duration of diabetes.
- There was an association found between internal locus of control of male patients with diabetes and age, and education.
- There was an association between chance locus of control and age, education and duration of diabetes among male patients with diabetes.
- There was an association found between powerful others locus of control of male patients having diabetes with age and duration of diabetes.
- There was an association between level of adherence to diabetic regimen among male patients with diabetes and age, education and duration of diabetes.
- There was an association between level of adherence to diabetic regimen among female patients with diabetes and education and duration of diabetes.

Limitations

1. Sample size in male and female patients with diabetes were 100. So subject findings should be generalized with caution.

2. Setting of the study was chosen due to the researcher's familiarity and it was not by random selection. Due to this methodological limitation, the findings should be generalized only to the selected hospital.

3. The researcher was not able to observe the practice of subjects with regard their behavior of adherence to diabetic regimen. Only believed their verbal responses.

Implications

The findings of the study have practical applications in the field of nursing. The implications of the study could be discussed in four areas namely nursing practice, nursing education, nursing research and nursing administration.

Implications for nursing practice

1. The study can be used to assess the locus of control, and adherence to diabetic regimen among the diabetic patients and to provide health education by using appropriate strategies.

2. Nursing personnel can educate patients with diabetes to adhere to the diabetic regimen to prevent complications.

3. Nurses can act as change agents by shifting the patients' locus of control from chance and powerful others to internal locus of control for better adherence to diabetic regimen.

Implications for nursing education

1. The study enhances student's knowledge regarding locus of control and adherence to diabetic regimen among diabetic clients.

2. The study will help the students to inquire into ways to improve the diabetic patients' adherence to diabetic regimen.

3. This study shows the relationship between locus of control and adherence to diabetic regimen, so the nursing curriculum should emphasize on the locus of control while dealing with the management of diabetes mellitus.

Implications for nursing research

1. There is a lot of scope for nurse researchers to conduct studies on the locus of control for the proper management of diabetes.

2. This study can be considered as a baseline for conducting future studies on the locus of control among diabetic patients.

Implications for nursing administration

1. The nurse administrator can arrange for continuing educational programs regarding locus of control of diabetic patients to improve their adherence to the therapeutic regimen.

2. The nurse managers can support the diabetic patients to adhere to the diabetic regimen by providing proper information about management.

Recommendations

1. A similar study can be conducted for a larger group

2. An explorative study can be done to identify the barriers in adherence to the diabetic regimen

3. A study can be done to assess the knowledge about the complications and self care management of diabetes mellitus.

4. The same study can be conducted at different settings to generalize the study findings.

5. Effectiveness of various nursing interventions to improve the adherence to diabetic regimen can be studied.

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APPENDIX - I

COPY OF LETTER SEEKING PERMISSION FROM GOVT. RAJAJI HOSPITAL TO CONDUCT THE STUDY

Sacred Heart Nursing College
Ultra Trust, Madurai
4/235, College Road,
Thasildar Nagar, Madurai-20

Ref. UT: SHNC:2011

To,

The Dean.
Govt. Rajaji Hospital,
Madurai.

Respected Sir/Madam

Sub: Sacred Heart Nursing College, Madurai- Project Work of M.Sc (N) Student- permission required –reg.

We wish to state that Mr.Benson Baby,final year M.sc (N) student of Sacred Heart Nursing College has to conduct a research project , which is to be submitted to the Tamilnadu Dr. M.G.R Medical University, Chennai in partial fulfillment of university requirements.

The topic of research project is “A study to assess the locus of control and adherence to diabetic regimen among male and female patients with diabetes ”.

We therefore request you to kindly permit to do his research work in your esteemed institutions under your valuable guidance and suggestions.

Thanking you,

Yours faithfully,

PRINCIPAL
SACRED HEART NURSING COLLEGE
ULTRA TRUST , Madurai-20

APPENDIX- II

LETTER REQUESTING OPTIONS AND SUGGESTIONS OF EXPERTS FOR ESTABLISHING CONTENT VALIDITY AND VALIDITY OF TOOL

From

Benson Baby,
MSc (N) II year,
Sacred Heart Nursing College,
Madurai.

To,

Respected Sir/Madam

SUB: Requesting opinions and suggestion of experts for the content validity and validity of tool. I'm a post graduate student (Medical Surgical Speciality) of Sacred Heart Nursing College. I have selected the below mentioned topic of the research project to submit to DR.M.G.R. Medical university, Chennai as a fulfilment of Master of Science in nursing.

TITLE OF THE TOPIC:

STUDY TO ASSESS THE LOCUS OF CONTROL AND ADHERENCE TO DIABETIC REGIMEN AMONG MALE AND FEMALE PATIENTS WITH DIABETES ATTENDING A SELECTED HOSPITAL OPD IN MADURAI

With regard to this may I kindly request you to validate my tool for its relevancy. I'm enclosing the objectives of the study. I would be highly obliged and remain thankful if you could validate and give it as early as possible.

Thanking you

Place : Madurai
Date :

Yours Faithfully
(Benson Baby)

APPENDIX III

LIST OF EXPERTS CONSULTED FOR CONTENT VALIDITY

1. Prof. Mrs. Chandrakala
   H.O.D Medical Surgical Nursing Department
   S.H.N.C

2. Prof. Mrs. Devakirubai
   Medical Surgical Nursing Department, S.H.N.C

3. Mrs. Andal
   Asst. Professor , Medical Surgical Nursing Department
   S.H.N.C

4. Prof. Jaya Thangaselvi
   Vice principal
   C.S.I. J.A.C.O.N
   Madurai

5. Mr. Senthil Kumar, M.Sc, M.Phil
   Statistician, SHNC, Madurai.

APPENDIX- IV

QUESTIONNAIRE (ENGLISH)

Part I ; Demographic Data

- Age in years: 31-40, 41-50, 51-60, 61-70, >70
- Educational status : illiterate, primary , upper primary , secondary, higher secondary, graduate
- Job status : employed , unemployed
- Type of diabetes : type I , type II
- Duration of diabetes: 3-6 month,7-12 months, 1-3 years, 4-7 years, >7years

Part II: Modified Diabetes Locus of Control Scale

Sl.No	Questions	SD	MD	D	A	MA	SA
1	It is my own behavior which determines how soon I will be able to maintain the normal blood sugar level.	**1**	**2**	**3**	**4**	**5**	**6**
2	As to my problem, what it will be, it will be.	**1**	**2**	**3**	**4**	**5**	**6**
3	If I see my doctor regularly,I'm less likely to have problems with diabetes.	**1**	**2**	**3**	**4**	**5**	**6**
4	Most things that causes diabetes to me, happens by chance.	**1**	**2**	**3**	**4**	**5**	**6**
5	Whenever my blood sugar level gets complicated, I should consult a medically trained professional.	**1**	**2**	**3**	**4**	**5**	**6**
6	I'm directly responsible for my glycemic level getting better or worse.	**1**	**2**	**3**	**4**	**5**	**6**
7	Other people play a big role in whether my blood sugar level gets normal , remains the same or gets worse.	**1**	**2**	**3**	**4**	**5**	**6**
8	Whatever goes wrong with my blood sugar levels my own fault.	**1**	**2**	**3**	**4**	**5**	**6**
9	Luck plays a big part in determining how my blood sugar level gets controlled.	**1**	**2**	**3**	**4**	**5**	**6**

10	In order for my glycemic level to maintain in normal limits, it is up to other people to see that right things happen.	**1**	**2**	**3**	**4**	**5**	**6**
11	Whatever improvement occurs with my blood sugar level maintenance is largely a matter of good fortune.	**1**	**2**	**3**	**4**	**5**	**6**
12	The main thing which affects my blood sugar level maintenance is what I myself do	**1**	**2**	**3**	**4**	**5**	**6**
13	I deserve the credit when my blood sugar level maintains in normal limits and the blame when it gets worse.	**1**	**2**	**3**	**4**	**5**	**6**
14	Following doctors' orders is the best way to keep my blood sugar level in normal limits.	**1**	**2**	**3**	**4**	**5**	**6**
15	If I'm having complications due to diabetes, it's a matter of fate.	**1**	**2**	**3**	**4**	**5**	**6**
16	If I'm lucky, I'll be able to maintain my blood sugar level within normal limits.	**1**	**2**	**3**	**4**	**5**	**6**
17	If my diabetes is getting complicated, it is because I've not been taking proper care of myself.	**1**	**2**	**3**	**4**	**5**	**6**
18	The type of help I receive from other people determines how soon I'll be able to maintain my blood sugar level in normal limits.	**1**	**2**	**3**	**4**	**5**	**6**

Key:

Good locus of control : 27-36

Moderate locus of control: 17-26

Poor locus of control : 6-16

SD - Strongly disagree **MD -Moderately disagree**

D -Disagree **A -Agree**

MA - Moderately agree **SA -Strongly agree**

THE SUMMARY OF DIABETES SELF- CARE ACTIVITIES

The questions below ask you about your diabetes self-care activities during the past 7 days. If you were sick during the past 7 days, please think back to the last 7 days that you were not sick.

DIET

1.How many of the last SEVEN DAYS have you followed a healthful eating plan?

01 2 3 4 5 6 7

2.On average, over the past month, how many DAYS PER WEEK have you followed your eating plan?

0 1 2 3 4 5 6 7

3. On how many of the last SEVEN DAYS did you eat five or more servings of fruits and vegetables?

0 1 2 3 4 5 6 7

4. On how many of the last SEVEN DAYS did you eat high fat foods such as red meat or full-fat dairy products?

7 6 5 4 3 2 1 0

5.On how many of the last SEVEN DAYS did you space carbohydrates evenly through the day?

EXERCISE

6. On how many of the last SEVEN DAYS did you participate in at least 30 minutes of physical activity? (Total minutes of continuous activity, including walking).

0 1 2 3 4 5 6 7

7. On how many of the last SEVEN DAYS did you participate in a specific exercise session (such as swimming, walking, biking) other than what you do around the house or as part of your work?

0 1 2 3 4 5 6 7

BLOOD SUGAR TESTING

8. On how many of the last SEVEN DAYS did you test your blood sugar?

0 1 2 3 4 5 6 7

9. On how many of the last SEVEN DAYS did you test your blood sugar the number of times recommended by your health care provider?

0 1 2 3 4 5 6 7

FOOT CARE

10. On how many of the last SEVEN DAYS did you check your feet?

0 1 2 3 4 5 6 7

11. On how many of the last SEVEN DAYS did you inspect the inside of your sandals for any torn or thorns?

0 1 2 3 4 5 6 7

12. On how many of the last SEVEN DAYS did you wash your feet?

0 1 2 3 4 5 6 7

13. On how many of the last SEVEN DAYS did you soak your feet?

7 6 5 4 3 2 1 0

14. On how many of the last SEVEN DAYS did you dry between your toes after washing?

0 1 2 3 4 5 6 7

SMOKING

#15. Have you smoked a cigarette—even one puff—during the past SEVEN DAYS?

0.No

1. Yes. If yes, how many cigarettes did you smoke on an average day?

Number of cigarettes:

#16. At your last doctor's visit, did anyone ask about your smoking status?

0 yes

1 no

#17. If you smoke, at your last doctor's visit, did anyone counsel you about stopping smoking or offer to refer you to a stop-smoking program?

0. No

1. Yes

2. Do not smoke.

#18. When did you last smoke a cigarette?

_ More than two years ago, or never smoked

_ One to two years ago

_ Four to twelve months ago

_ One to three months ago

_ Within the last month

_ Today

SELF-CARE RECOMMENDATIONS

#19. Which of the following has your health care team (doctor, nurse, dietitian, or diabetes educator) advised you to do? Please check all that apply:

_ a. Follow a low-fat eating plan

_ b.Follow a complex carbohydrate diet

_ c. Reduce the number of calories you eat to lose weight

_ d.Eat lots of food high in dietary fiber

_ e. Eat lots (at least 5 servings per day) of fruits and vegetables

_ f. Eat very few sweets (for example: desserts, non-diet sodas, candy)

_ g.Other (specify):

_ h.I have not been given any advice about my diet by my health care team.

#20. Which of the following has your health care team (doctor, nurse, dietitian or diabetes educator) advised you to do? Please check all that apply:

_ a. Get low level exercise (such as walking) on a daily basis.

_ b.Exercise continuously for a least 20 minutes at least 3 times a week

_ c. Fit exercise into your daily routine (for example, take stairs instead of elevators, park a block away and walk, etc.)

_ d.Engage in a specific amount, type, duration and level of exercise.

_ e. Other (specify):

_ f. I have not been given any advice about exercise by my health care team.

#21. Which of the following has your health care team (doctor, nurse, dietitian, or diabetes educator) advised you to do? Please check all that apply:

_ a.Test your blood sugar using a drop of blood from your finger.

_ b.Test your blood sugar using a machine to read the results.

_ c.Test your urine for sugar.

_ d.Other (specify):

_ e. I have not been given any advice either about testing my blood or urine sugar level by my health care team.

#22. Which of the following medications for your diabetes has your doctor prescribed? Please check all that apply.

_ a. An insulin shot 1 or 2 times a day.

_ b.An insulin shot 3 or more times a day.

_ c. Diabetes pills to control my blood sugar level.

_ d.Other (specify):

_ e. I have not been prescribed either insulin or pills for my diabetes

MEDICATION

23. On how many of the last SEVEN DAYS, did you take your recommended diabetes medication?

0 1 2 3 4 5 6 7

OR

24. On how many of the last SEVEN DAYS did you take your recommended insulin injections?

0 1 2 3 4 5 6 7

25. On how many of the last SEVEN DAYS did you take your recommended number of diabetes pills?

0 1 2 3 4 5 6 7

#- questions that were not scored.

DIET

Write down the food items that you are taking for each day

Day	Morning	Mid morning	Afternoon	Evening	Night
1st					
2nd					
3rd					
4th					
5th					
6th					
7th					

Read the questions and fill the boxes if you have done it .

FOOT CARE

Sl No	Questions	0	1	2	3	4	5	6	7
1	Did you check your feet?								
2	Did you inspect the inside of your sandals for any thorns torn?								
3	Did you washed your feet by giving specific attention other tha bathing?								
4	Did you soak your feet for smoothening?								
5	Did you dry between your toes after washing?								

EXERCISE

Sl No	Questions	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
1.	Did you participate in at least 30 minutes of physical activity (Total minutes of continuous activity, including walking).								
2.	Did you participate in a specific exercise session (such as swimming, walking, jogging) other than what you do around the house or as part of your work?								

BLOOD SUGAR TESTING

Sl No	Questions	0	1	2	3	4	5	6	7
1.	Did you test your blood sugar?								
2.	Did you test your blood sugar the number of times recommended by your health care provider?								

Key:

Good adherence: 67-99

Moderate adherence: 34-66

Poor adherence: 0-33

APPENDIX V

QUESTIONNAIRE (TAMIL)

வடிவமைக்கப்பட்ட நேர்முகத்தேர்வுக்கான வழிகாட்டி

பகுதி I :குறிப்பட்ட காலத்தில் குறிப்பட்ட சமூகத்தினறிடையே ஏற்படும் மாற்றத்தின் விவரம்

வயது(வருடத்தில்):31-40 41-50 51-60 61-70 >71

கல்வித் தகுதி: படிபப்றிவற்றவர் தொடக்கப்பள்ளி

நடுநிலைப்பள்ளி உயர்நிலைப்பள்ளி

மேல்நிலைப்பள்ளி பட்டதாரி

வேலை தகுதி: வேலை பார்ப்பவர் வேலை பார்க்காதவர்

சர்க்கரை நோயின் வகை: வகை I வகைII

சர்க்கரை நோயின் கால அளவு:3-6 மாதங்கள், 7-12 மாதங்கள், 1-3 வருடங்கள் 4-7 வருடங்கள் >7 வருடங்கள்

பகுதிII

வ. எண்	கேள்விகள்	SD	MD	D	A	MA	SA
1	இரத்தத்தில் சர்க்கரையின் அளவை இயல்பாக வைத்துக்கொள்வதைத் தீர்மானிப்பது என்னுடைய நடவடிக்கைதான்	**1**	**2**	**3**	**4**	**5**	**6**
2	என்னுடைய வியாதி எவ்வாறு இருக்குமோ அவ்வாறு இருக்கும்	**1**	**2**	**3**	**4**	**5**	**6**
3	நான் முறையான இடைவெளியில் மருத்துவரை பார்த்தால் சர்க்கரைநோயின் பிரச்சனை குறைவானதாகவே இருக்கும்	**1**	**2**	**3**	**4**	**5**	**6**
4	எனக்கு சர்க்கரைநோயை விளைவிக்கும் பல காரியங்கள் தற்சயலாக ஏற்பட்ட ஒன்றாகும்	**1**	**2**	**3**	**4**	**5**	**6**
5	எப்பொழுதெல்லாம் என்னுடைய இரத்தத்தில் சர்க்கரையின் அளவு கூடுகிறதோ அப்பொழுதெல்லாம் மருத்துவரை அனுக வேண்டும்	**1**	**2**	**3**	**4**	**5**	**6**
6	என்னுடைய சர்க்கரையின் அளவு கூடுவதற்கும் குறைவதற்கும் நானே காரணமாக இருக்கிறேன்	**1**	**2**	**3**	**4**	**5**	**6**
7	என்னுடைய இரத்தத்தில் சர்க்கரையின் அளவு குறைவதற்க்கோ அதிகரிப்பதற்க்கோ அல்லது தற்போது இருப்பதைப் போன்று இருப்பதற்கோ மற்றவர்கள் முக்கியபங்கு வகிக்கின்றனர்	**1**	**2**	**3**	**4**	**5**	**6**

8	இரத்தத்தில் சர்க்கரையின் அளவில் எப்போழுதெல்லாம் மாற்றம் ஏற்ப்பெடுகிறதோ அதற்க்கெல்லாம் நான் தான் காரணம்	**1**	**2**	**3**	**4**	**5**	**6**
9	இரத்தத்தில் சர்க்கரையின் அளவு கட்டுப்பாடிற்கு அதிஷ்டம் முக்கிய பங்கு வகிக்கிறது	**1**	**2**	**3**	**4**	**5**	**6**
10	என்னுடைய சர்க்கரையின் அளவை இயல்பாக வைத்துக்கொள்வதற்கு எப்பொழுதும் சரியான காரியங்கள் நடக்கும்படி மற்றவர்கள் பார்த்துக் கொள்ள வேண்டும்	**1**	**2**	**3**	**4**	**5**	**6**
11	இரத்தத்தில் சர்க்கரையின் அளவில் ஏற்படும் எந்தவகை முன்னேற்றத்திற்க்கும் காரணம் என்னுடைய நல்ல நேரமே	**1**	**2**	**3**	**4**	**5**	**6**
12	நான் என்ன செய்கிறேனோ அதுதான் என்னுடைய இரத்தத்தில் சர்க்கரையின் அளவை பாதிக்கிறது	**1**	**2**	**3**	**4**	**5**	**6**
13	இரத்தத்தில் சர்க்கரையின் அளவு இயல்பாக இருப்பதற்கான பாராட்டையும் நான் தான் பெறுகிறேன், அது அதிகரிக்கும் போது அதற்கான தண்டனையையும் நான் தான் பெறுகிறேன்	**1**	**2**	**3**	**4**	**5**	**6**
14	இரத்தத்தில் சர்க்கரையின் அளவை கட்டுப்பாட்டில் வைப்பதற்க்கு மருத்துவரின் ஆலோசனையைப் பின்பற்றுவதே நல்லவழி	**1**	**2**	**3**	**4**	**5**	**6**
15	சர்க்கரையின் நோயினால் நான் இவ்வளவு பாடுபடவேண்டும் என்பது என்னுடைய விதி	**1**	**2**	**3**	**4**	**5**	**6**

16	நானே அதிர்ஷ்டசாலியாக இருந்தால் இரத்தத்தில் சர்க்கரையின் அளவை இயல்பாக பார்த்துக் கொள்ள முடியும்	**1**	**2**	**3**	**4**	**5**	**6**
17	நான் என்னை சரியாக பார்த்துகொள்ளாவிட்டால், அது எனக்கு சர்க்கரை நோயின் பக்கவிளைவுகளை ஏற்ப்படுத்தும்	**1**	**2**	**3**	**4**	**5**	**6**
18	மற்றவற்களிடம் நான் பெறும் அனைத்து உதவிகளும், நான் எவ்வளவு விரைவில் என்னுடைய சக்கரையின் அளவை கட்டுப்படுத்துகிறேன் என்பது தீர்மானிக்கிறது	**1**	**2**	**3**	**4**	**5**	**6**